Ask your Jobber or Write for Free Copies of our latest Cumulative Index and "How to File" Folders

TRADE NAME	MODEL	FOLDER NO.
TELEVISION COURSE—INSTALLMENT No. 15		
Admiral	6R11 (Ch. 6R1)	492-1
Admiral	7G11, 7G12, 7G14, 7G15, 7G16 (Ch. 7G1)	492-2
Aircastle	G-521	492-3
Aircastle	138104	492-23
Airline	64BR-7300A, 64BR-7310A, 64BR-7320A	492-4
Clarion	12110M	492-5
Concord	2-106	492-6
Crosley	9-121, 9-122W	492-8
Hoffman	C1006, C1007	492-9
Kappler	102T	492-10
Knight	6D-235	492-11
Majestic	8FM889 (Ch. 8C07D)	492-12
Masco	MA-25HF	492-13
Motorola	68T11 (Ch. HS-144)	492-14
Motorola	88FM21 (Ch. HS-133)	492-15
Packard-Bell	682	492-16
Philco	49-504, 49-504-1	492-17
Philco	49-1405	492-24
RCA	630TS, 630TCS, 8TS30 Television Receiver	492-18
Trav-ler	5036	492-19
Westinghouse	H-185, H-195 (Ch. V-2131, V-2131-1)	492-20
Zenith	5D810 (Ch. 5E02)	492-21
Zenith	7R887 (Ch. 7E22)	492-22

PHOTOFACT* Folder

ADMIRAL CHASSIS MODEL 6R1

ADMIRAL CHASSIS MODEL 6R1

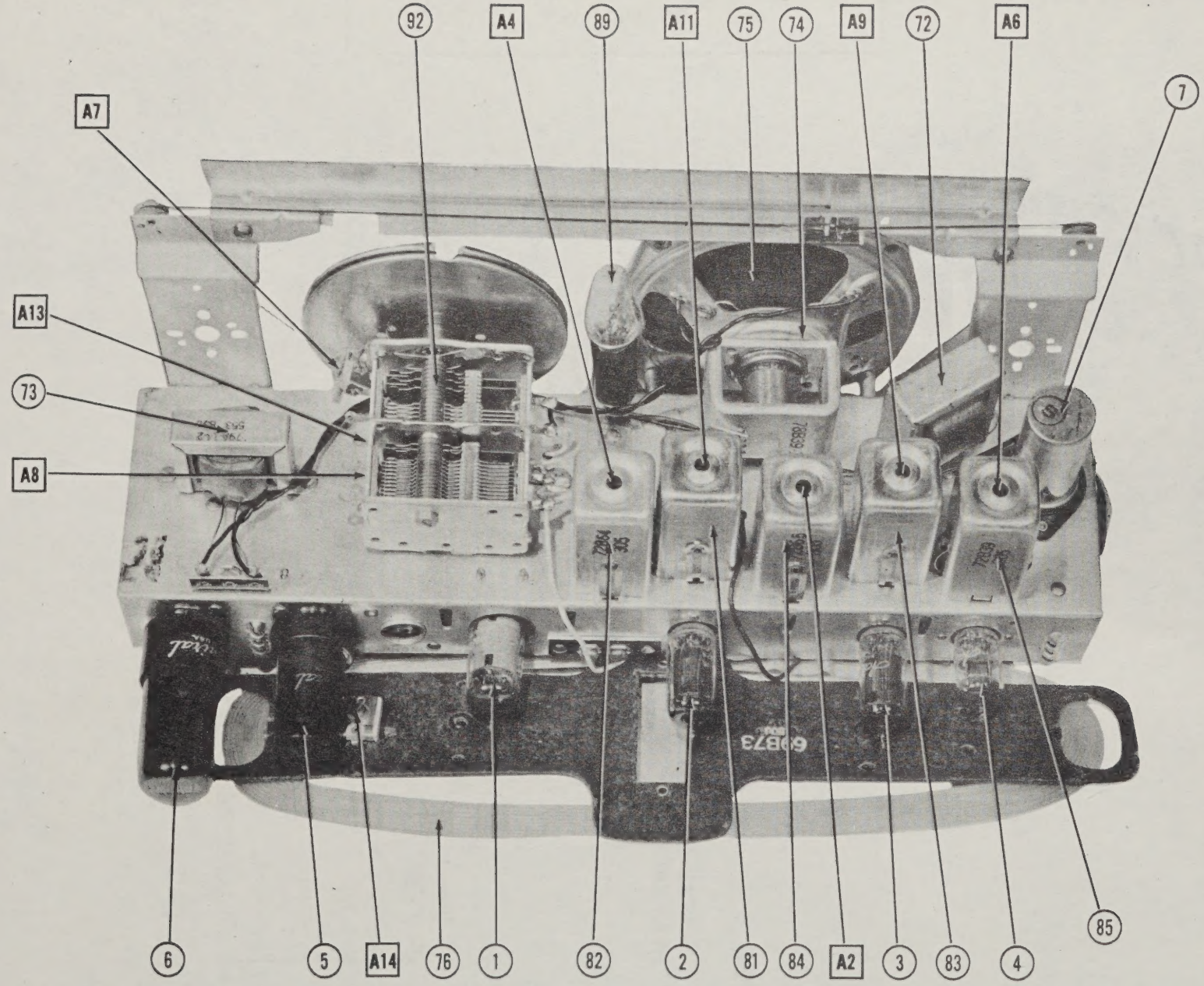
ADMIRAL CHASSIS MODEL 6R1

ADMIRAL MODEL 6R11

TRADE NAME	Admiral, Model 6R11 (Ch. 6R1)		
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Ill.		
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna		
TUBES (SIX)	Types, 12BA7 Converter, 12BA6 IF Amp., 12BA6 FM 2nd IF-AM Det., 12AL5 Ratio Detector, 12SJ7 AF Amp., 50L6GT Power Output.		
POWER SUPPLY	110-120 Volts AC	RATING	.39 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC	FREQ. MOD.	88-109MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


92
A4
89
A11
75
74
A9
72
A6
7
A7
A13
73
A8
6
5
A14
76
1
82
2
81
84
A2
3
83
4
85

A
B
A1
A3
A5
A10
A12
8
27
57
26
58
18
9
46
69
70
54
29
51
32
91
21
53
52
41
90
34
36
86
62
20
14
16
64
66
61
45
24
60
59
28
55
33
56
50
31
88
42
78
48
38
35
44
43
49
87
19
63
12
22
68
67
11
65
15
13
17
79
80
37

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BA7	12BA7		
2	IF Amp.	12BA6	12BA6	7BK	
3	FM 2nd IF-AM Det.	12BA6	12BA6	7BK	
4	Ratio Detector	12AL5	12AL5	6BT	
5	AF Amp.	12SJ7	12SJ7	8N	
6	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	70	150	67C6-40	AF888D#	UP8415	DY-8040-150	EL-340#	◘ Filter
B	30	150						▲ "
8	4	50	67A4-8	PRS150/4	BR415	M-4-450	UT-41	Stabilizing Cap.
9	.05	200	64B1-32	484-05	GT2S5	ST-4-05	TC-15	Line Filter
10	.1	200	64B1-30	484-.1	GT2P1	ST-2-1	72P2	Line Isolation-Note 1
11	.01	400	64B1-25	484-01	GT4S1	ST-4-01	TC-11	Output Plate Bypass
12	.01	400	64B1-25	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
13	.01	400	64B1-25	484-01	GT4S1	ST-4-01	TC-11	" "
14	.1	200	64B1-30	484-.1	GT2P1	ST-2-1	TC-1	AF Screen Bypass
15	.1	200	64B1-30	484-.1	GT2P1	ST-2-1	TC-1	AF Plate Decoupling
16	.002	600	64B1-14	684-002	GT6D2	ST-6-002	TC-22	Tone Compensation
17	.002	600	64B1-14	684-002	GT6D2	ST-6-002	TC-22	" "
18	.002	600	64B1-14	684-002	GT6D2	ST-6-002	TC-22	De-emphasis
19	.01	400	64B1-25	484-01	GT4S1	ST-4-01	TC-11	Phono Isolation
20	.18	200	64A2-2	484-.2	GT4P2	ST-4-2	TC-2	Phono Bias Filter
21	.01	400	64B1-25	484-01	GT4S1	ST-4-01	TC-11	AVC Filter
22	50	300	65B6-4	1468-00005	5W5Q5	MO.5-45	1FM-45	AF Plate Bypass-Cer.
23	1000	300	65B9-31	1468-001	1W5D1	MW.5-21	1FM-21	Audio Coupling "
24	500	300	65B9-24	1468-0005	5W5T5	MO.5-35	1FM-35	Tone Comp.-Cer.-Note 2
25	10000	300	65A10-3	1467-01	1D3S1	MW.3-11	1FM-11	RF Bypass-Cer.-Note 1
26	100	500	65B6-7	1469-0001	5R5T1	MOS.5-31	MS-31	FM Diode Load Cap.-Cer.-See Note 3
27	100	500	65B6-7	1469-0001	5R5T1	MOS.5-31	MS-31	"
28A	4000	300	65A17-1	1467-004	1D5D4	MW.5-24	1FM-24	2nd IF Decoupling-Cer.
B	4000	300		1467-004	1D5D4	MW.5-24	1FM-24	Fil. Bypass
29A	100	300	*	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter-Cer.
B	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	" " " "
30	5000	300	65A10-1	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Plate Decoup.-Cer.-See Note 1
31	10000	300	65A10-3	1467-01	1D3S1	MW.3-11	1FM-11	1st IF Screen Byp.-Cer.
32	5000	300	65A10-1	1467-005	1D5D5	MW.5-25	1FM-25	AVC Filter Cer.
33	5000	300	65A10-1	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass Pwr. Supply-Cer.
34	5000	300	65A10-1	1467-005	1D5D5	MW.5-25	1FM-25	Decoupling-Cer.
35	5000	300	65A10-1	1467-005	1D5D5	MW.5-25	1FM-25	Conv. Screen Byp.-Cer.
36	35	300	65B6-57					Osc. Grid Cap.-Cer-See Note 1
37	50	300	65B6-4	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Feedback-Cer.-See Note 4
38	5000	300	65A10-1	1467-005	1D5D5	MW.5-25	1FM-25	Osc. Feedback-Cer.
39	1500	300	65B9-63	1467-0015	1W5D15	MW.5-215	1FM-215	Tuning Cap. Iso.-Cer.-Note 1
40	5000	300	65A10-1	1467-005	1W5D5	MW.5-25	1FM-25	"
41	200	500	65B9-15	1468-0002	5W5T2	MO.5-32	1FM-32	FM Ant. Coupling-Cer.
42	1500	300	65A14-2	1467-0015	1W5D15	MW.5-215	1FM-215	FM Ant. Iso.-Cer.-Note 5
43	1500	300	65A14-2	1467-0015	1W5D15	MW.5-215	1FM-215	Fil. Bypass-Cer.
44	1500	300	65A14-2	1467-0015	1W5D15	MW.5-215	1FM-215	Fil. Bypass-Cer.

* Item numbers 29A & B and 54 are combined into one unit, obtainable under manufacturers Part #63A3-1.

Parallel sections to obtain desired capacity.

Note 1-Used in Underwriters approved models only.

Note 2-Used in early models only; removed to prevent detuning on FM.

Note 3-5%-.00075 Temp. Coef. When either Item 26 or 27 are replaced, replace both with capacitors of equal value.

Note 4-10% Tolerance 0 Temp. Coef.

Note 5-Used only in model numbers ending in "N".

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-105†		†Drill and tap magnet frame.
74	PM	3.4Ω	78B39-1	Mod. P5-X	5A15†	
	CONE DIA.	VC DIA.				
75	4½"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: MEISSNER PART No.
76	Loop Ant.		1.6Ω	69B73	
77	FM Dipole		0Ω	AB155	
78	FM Ant.Coil	0Ω	0Ω	69A68	
79	Osc.Coil BC		6Ω	69A20-3	
80	" " FM		0Ω	69A69	
81	1st IF AM	13Ω	13Ω	72B66	
82	1st IF FM	1.7Ω	.1Ω	72B64	
83	2nd IF AM	13Ω	13Ω	72B66	
84	2nd IF FM	2.4Ω	.1Ω	72B65	
85	FM Det.Trans.	2.2Ω	0Ω	72B39	
86	Conv. Cath. Choke		1.3Ω	AA139-5	
87	Fil. Choke		0Ω	73A2-3	
88	" "		0Ω	73A2-3	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
89	Screw	117			81A2-2		Mazda #10C7

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
90	Switch	77B22	Band-Phono
91	Rectifier	93A1-2	Selenium
92	Tuning Gang	A1814	AM (22-505MMF, 29-170MMF)
A7	Trimmer	66A19-2	FM Osc. Adj.
	Cabinet	15A169	
	Dial Scale	21B51	Glass
	Dial Pointer	25A21-1	
	Knob	33A21-5	Volume & Tone
	"	33B34-2	Tuning
	"	33B34-1	Radio-Phono

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	
45A	1 Meg.	½	75B2-12	D19-137X	AT-112	Volume Control tapped @ 500KΩ
B	Shaft		Not Req.	E	KSS-3	Attach to 45A per instructions
46A	2 Meg.	½	75B1-12		AM-83-S	Tone Control
B	Shaft		Not Req.		KSS-3	Attach to 46A per instructions
C	Switch		" "		SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.	
47	10Ω	½	60B-2-100		Br.-Blk.-Blk. Parasitic Suppressor-See Note 6
48	22KΩ	½	60B-2-223	BTS-22K	Red-Red-Or. Osc. Grid
49	1000Ω	½	60B-2-102	BTS-1000	Br.-Blk.-Red Conv. Screen Decoupling
50	470KΩ	½	60B-2-474	BTS-470K	Yl.-Vi.-Yl. AVC Network
51	470KΩ	½	60B-2-474	BTS-470K	Yl.-Vi.-Yl. " "
52	470Ω	½	60B-2-471	BTS-470	Yl.-Vi.-Br. Decoupling
53	1000Ω	½	60B-2-102	BTS-1000	Br.-Blk.-Red 1st IF Screen
54	47KΩ	½	*	BTS-47K	Yl.-Vi.-Or. Diode Filter
55	220KΩ	½	60B-2-224	BTS-220K	Red-Red-Yl. Diode Load
56	1000Ω	½	60B-2-102	BTS-1000	Br.-Blk.-Red FM 2nd IF Decoup.
57	39Ω	½	60B-2-391		Or.-White-Br. RF Filter
58	27KΩ	½	60B-2-273	BTS-27K	Red-Vi.-Or. De-emphasis
59	6800Ω	½	60B-1-682	BTS-6800	Blue-Gray-Red Ratio Det. Diode Load
60	6800Ω	½	60B-1-682	BTS-6800	Blue-Gray-Red " " " "
61	27KΩ	½	60B-2-273	BTS-27K	Red-Vi.-Or. Tone Compensation
62	100KΩ	½	60B-2-104	BTS-100K	Br.-Blk.-Yl. Voltage Dropping
63	4.7 Meg.	½	60B-3-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
64	1.8 Meg.	½	60B-3-185	BTS-1.8 Meg.	Br.-Gray-Grn. AF Screen
65	470KΩ	½	60B-2-474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
66	47KΩ	½	60B-2-473	BTS-47K	Yl.-Vi.-Or. AF Plate Decoup.
67	470KΩ	½	60B-2-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
68	150Ω	½	60B-8-151	BW-½-150	Br.-Grn.-Br. Output Cathode
69	33Ω	1	60B-14-330	BW-1-33	Or.-Or.-Blk. Surge Limiter
70	47Ω	1	60B-14-470	BW-1-47	Yl.-Vi.-Blk. Line Dropping
71	150KΩ	½	60B-2-154	BTS-150K	Br.-Grn.-Yl. Line Isolation-See Note 7

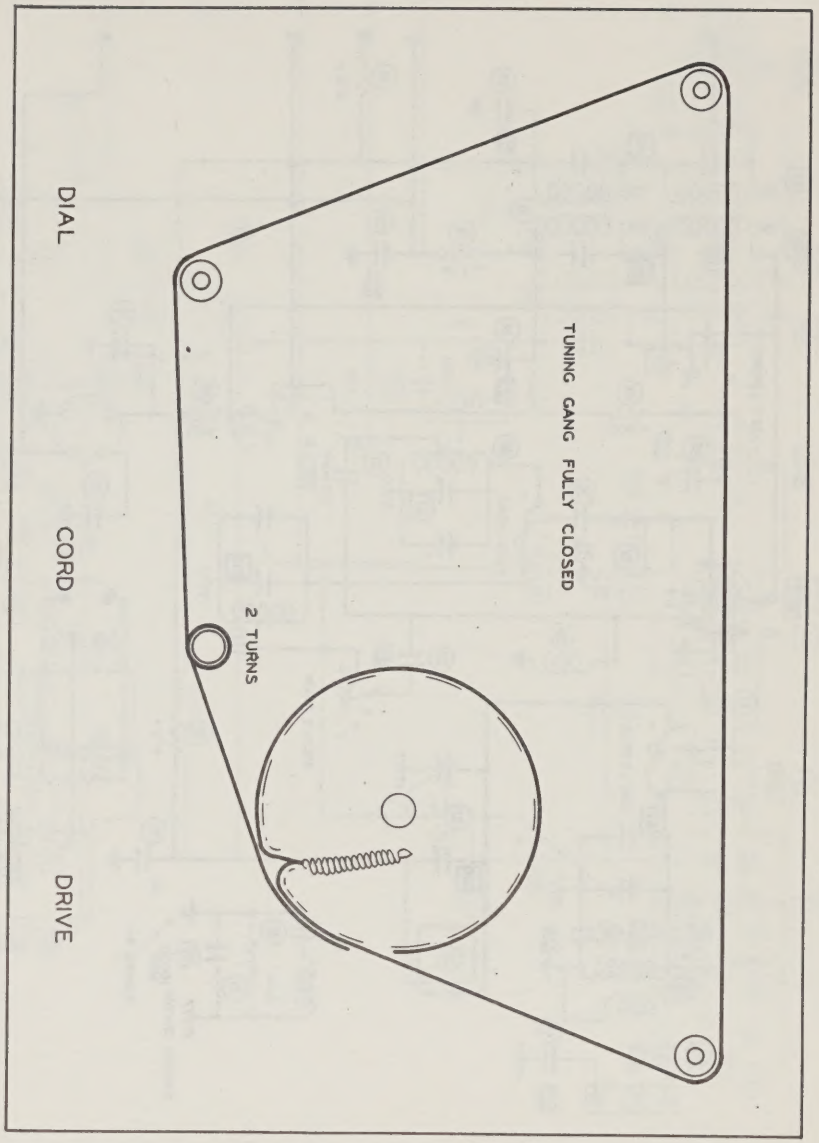
*Items 54 and 29A & B are combined into one unit obtainable under Part #63A3-1.
Note 6-Not used in all models.
Note 7-Used only on "UL" models.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ∿	ADMIRAL PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
72	.095A	119Ω	2.5 Henries	74A15-2	C-2303#		C-2977	#Drill one new mounting hole.

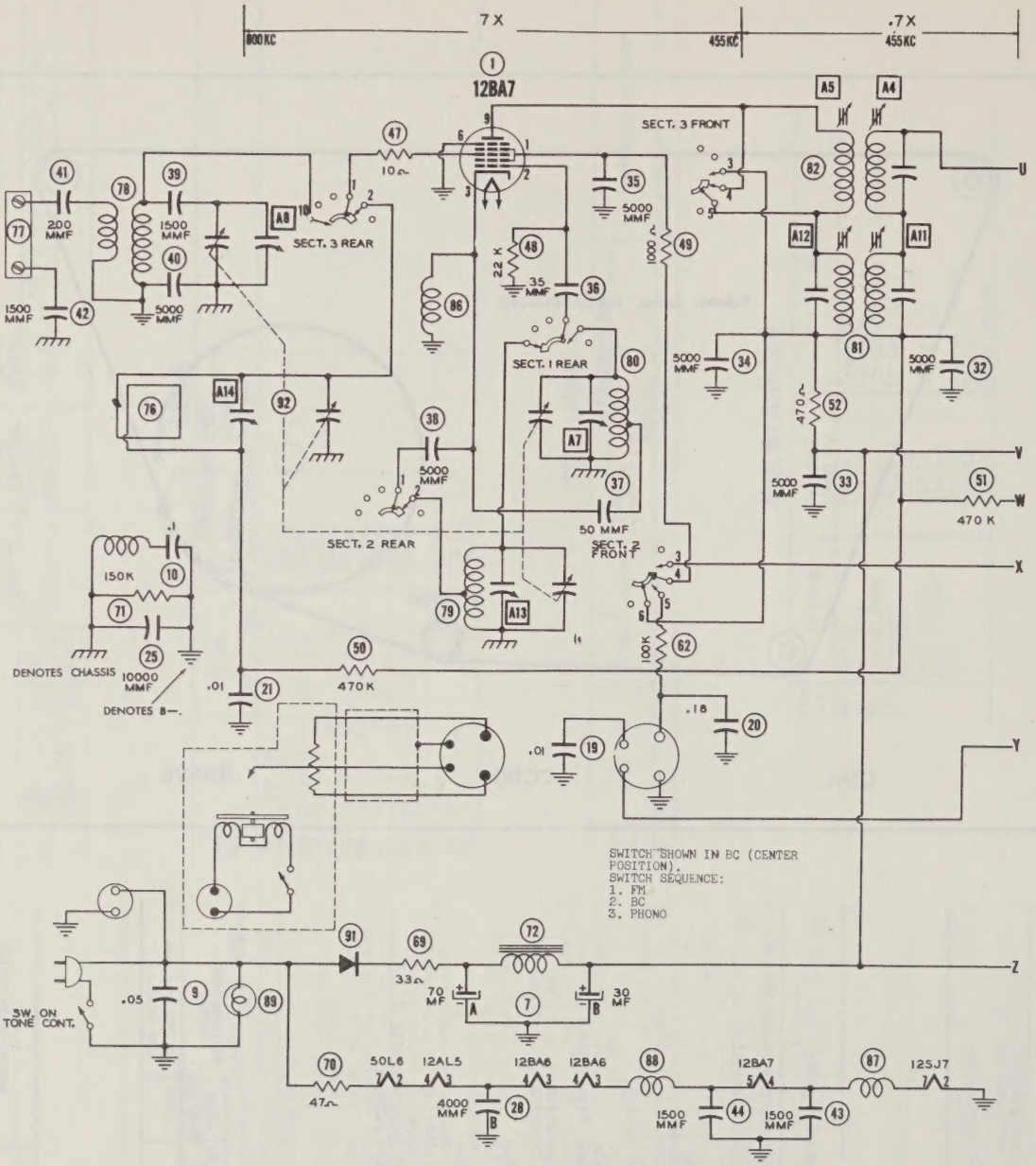
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
73	19000Ω	3.4Ω	220Ω	.4Ω	79A14-2	A-3876	T22S45	A-2928	



DATE 1/49-#492-1

SET #54-FOLDER #1



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
1	12BA7	100VDC	-10VDC§	0V.	12VAC	27VAC	0V.	-.7VDC	0V.	110VDC
2	12BA6	-.7VDC	0V.	27VAC	41VAC	120VDC	115VDC	0V.	-	-
3A	12BA6	-.7VDC	0V.	41VAC	50VAC	0V.	0V.	0V.	-	-
‡ 3B	12BA6	-.5VDC	0V.	41VAC	50VAC	85VDC	85VDC	0V.	-	-
‡ 4	12AL5	.5VDC	-1VDC	50VAC	65VAC	-2VDC	0V.	5.4VDC	-	-
5	12SJ7	0V.	0V.	0V.	-.4VDC	0V.	9.4VDC	12VAC	7.7VDC	-
6	50L6GT	0V.	112VAC	113VDC	120VDC	0V.	0V.	65VAC	8VDC	-

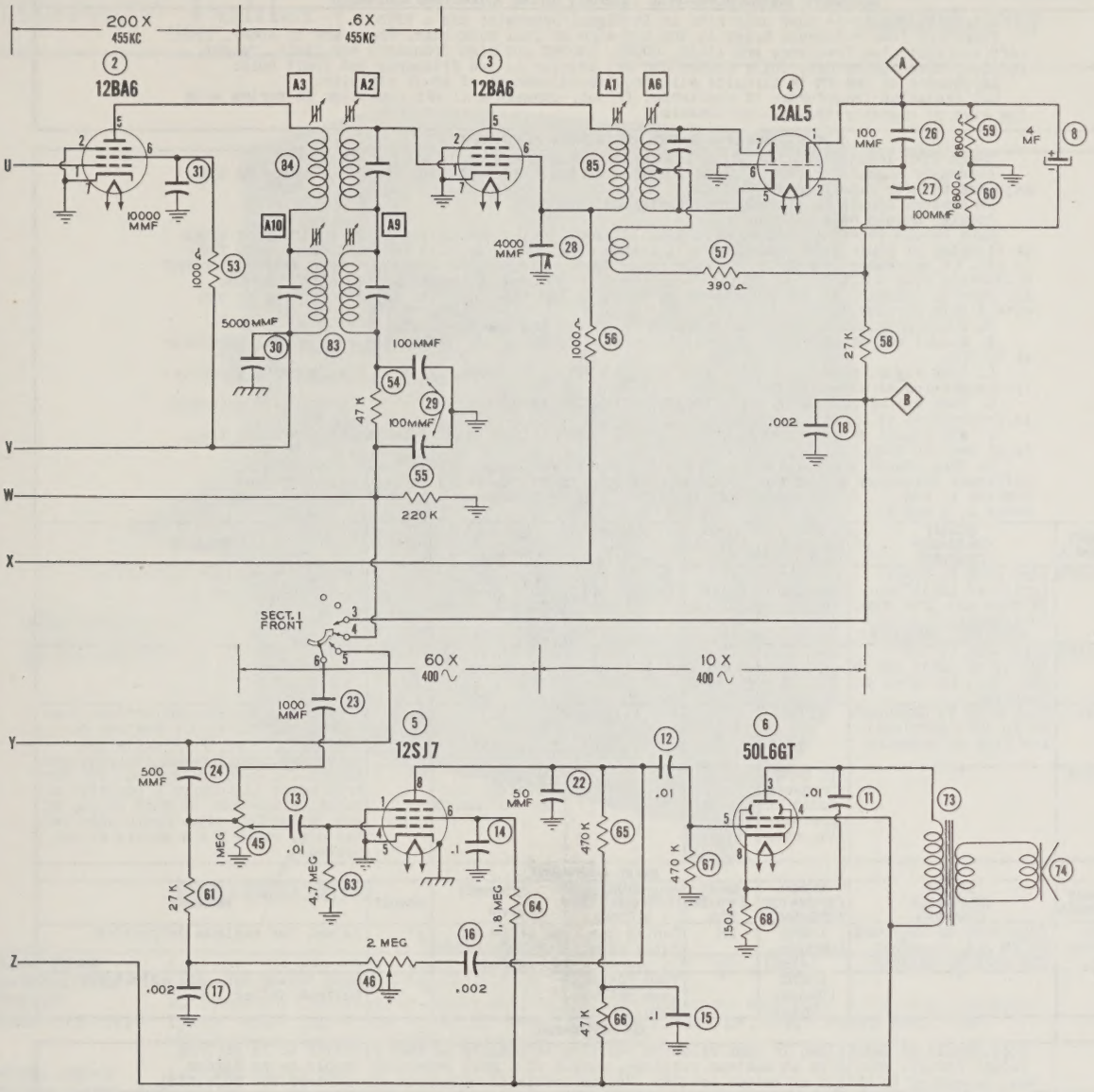
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1949



IF = 455 KC AM

IF = 10.7 MC FM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
1	12BA7	22KΩ	22KΩ	1.3Ω	13Ω	25Ω	0Ω	1.2 Meg.	0Ω	20KΩ
2	12BA6	750KΩ	0Ω	25Ω	36Ω	20KΩ	21KΩ	0Ω	-	-
3A	12BA6	250KΩ	0Ω	36Ω	46Ω	INF.	INF.	0Ω	-	-
‡ 3B	12BA6	250KΩ	0Ω	36Ω	46Ω	22KΩ	22KΩ	0Ω	-	-
‡ 4	12AL5	6.8KΩ	6.8KΩ	46Ω	54Ω	1 Meg.	0Ω	1 Meg.	-	-
‡5	12SJ7	0Ω	0Ω	0Ω	4.7 Meg.	0Ω	1.8 Meg.	13Ω	520KΩ	-
6	50L6GT	0Ω	75Ω	20KΩ	20KΩ	470KΩ	0Ω	54Ω	150Ω	-

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1949

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Alignment should be done only with an AM Signal Generator and a VTVM.

There are four reference holes in the top edge of dial backplate. These are in order, from left to right: low frequency end limit, 600KC, 1400KC and high frequency end limit. To set pointer, turn tuning cap. fully closed and set pointer to low frequency end limit hole.

Adjustment of the FM-IF circuits will require adjustment of AM-IF circuits.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

FM-IF & RATIO DETECTOR ALIGNMENT

Dress VTVM leads away from signal generator leads and chassis wiring.

Attenuate signal generator output to maintain peak deflection of about 1.5 volts on all adjustments with exception of Step 4.

FM Antenna should be disconnected during alignment.

Speaker should be connected.

Care should be excercised in adjusting IF slugs to prevent chipping or splitting of slugs or slipping of slugs into center of coil forms. If slug should slip into center of coil form it will be necessary to remove opposite slug. Then, using a thin rod and a screwdriver, "Jockey" dislocated slug until it re-engages the threads in the coil form. If a slug should become stripped or cracked, it may be removed by removing the slug opposite it, and forcing it out with a thin screwdriver.

To check selectivity curve as required in Step 3 proceed as follows:

A. Adjust output of signal generator for exactly 1.5 volts deflection with signal generator at 10.7MC.

B. Tune signal generator above 10.7MC until VTVM reads exactly + 1.0 volt. Note accurately frequencies of signal generator.

C. Tune signal generator below 10.7MC until VTVM reads exactly + 1.0 volt. Note accurately frequencies of signal generator.

D. Add signal generator frequencies of B & C and divide by 2. This is the center IF freq. to be used in Step 4.

E. Tune signal generator above and below 10.7MC and note voltage reading on VTVM at different frequency points and plot shape of selectivity curve as in Fig. 5 & 6. Curves similar to Fig. 1, 2 and 3 are satisfactory. If a curve such as Fig. 4 is obtained repeat Steps 1, 2 and 3.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.001MFD	High side to Pin 1 (grid) of 12BA6 2nd IF Tube (3). Low side to chassis.	10.7MC (Unmodulated)	FM (fully counter-clockwise)	Tuning cap. fully open.	DC probe to Point (A) .Common to chassis	A1	Adjust for maximum deflection.
2	.001MFD	High side to Pin 1 (grid) of 12BA6 1st IF Tube (4). Low side to chassis.	"	"	"	"	A2,A3	" " " "
3	Direct	High side to ungrounded FM Ant. terminal. Low side to chassis.	"	"	"	"	A4,A5	Adjust for maximum deflection, then repeat A1 thru A5 for maximum deflection. Check IF selectivity curve per prealignment instructions.
4	Direct	"	IF center frequency found in preceeding step.	"	"	DC probe to Point (B) .Common to chassis	A6	Adjust for zero deflection. The correct point is between a positive & negative maximum. If this or any of the preceding adjustments were very far off, steps 3 & 4 should be repeated.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	270Ω carbon res.	High side to ungrounded FM ant. terminal. Low side to chassis.	109MC (Unmodulated)	FM	Tuning cap. fully open.	DC probe to Point (A) .Common to chassis.	A7	Adjust for maximum deflection.
6	"	"	102MC (Unmodulated)	"	Tune for maximum deflection.	"	A8	Rock tuning cap. and adjust for maximum deflection.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7	.1 MFD	High side to large AM stator of tuning cap. Low side to chassis.	455KC	AM (Center Position	Tuning cap. fully open.	Across voice coil	A9,A10 A11,A12	Adjust for maximum output.
8	Direct	"	1620KC	"	"	"	A13	Adjust for maximum output. Install receiver in cabinet with loop connected.
9		Loop	1400KC	"	Tune for maximum output.	"	A14	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FIG.1

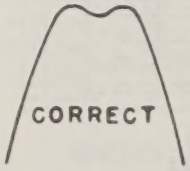


FIG.2

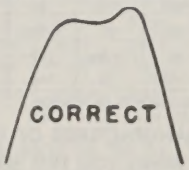


FIG.3

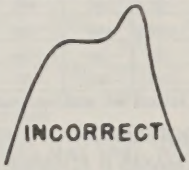


FIG.4

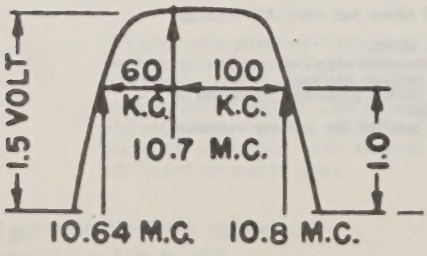


FIG.5

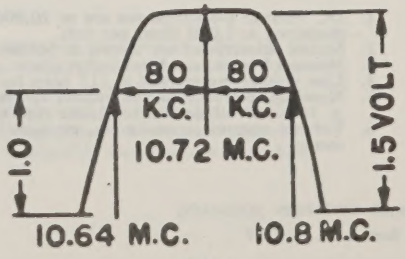
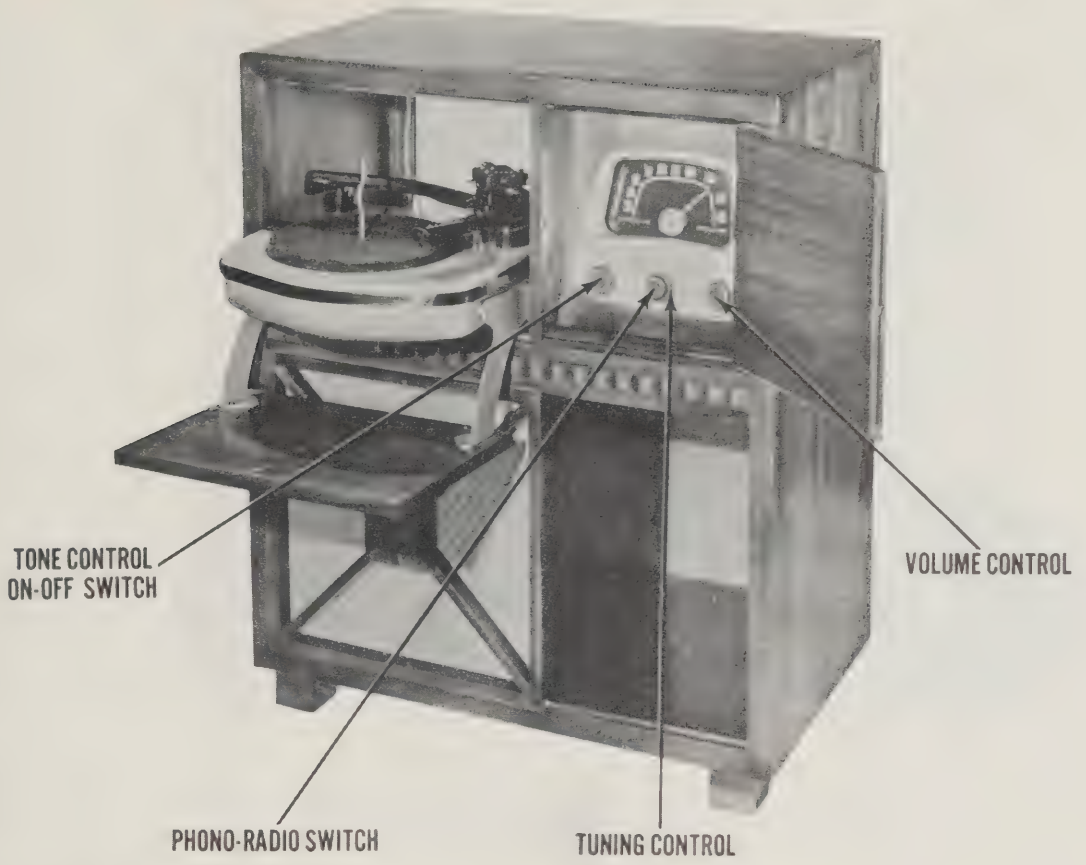


FIG.6

ADMIRAL CHASSIS
MODEL 7G1



ADMIRAL CHASSIS
MODEL 7G1

ADMIRAL MODEL 7G14

TRADE NAME	Admiral, Models 7G11, 7G12, 7G14, 7G15, 7G16 (Ch. 7G1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (SEVEN)	Types, 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6SQ7 Phase Inv., (2) 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .45 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis. (Connect 100KΩ resistor across loop antenna terminals.)	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2	.1 MFD.	"	1600KC	1600KC	"	A5	Adjust for maximum output. Disconnect 100KΩ resistor and connect loop antenna to respective terminals.
3		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

ADMIRAL MODEL 7G14

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	IF Amp.	6SK7	6SK7	8N	
3	Det.-AVC-AF	6SQ7	6SQ7	8Q	
4	Phase Inverter	6SQ7	6SQ7	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Power Output	6K6GT	6K6GT	7S	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	30	350	67C6-22	AF88J	UP3345	DY-2x30-450	EL-240	◓ Filter
B	30	350						■ "
9	.002	600	64B1-14	684-002	GT6D2	ST-6-002	TC-22	Output Plate Bypass
10	.02	400	64B1-24	484-02	GT4S2	ST-4-02	TC-12	Audio Coupling
11	.02	400	64B1-24	484-02	GT4S2	ST-4-02	TC-12	" "
12	.02	400	64B1-24	484-02	GT4S2	ST-4-02	TC-12	" "
13	.002	600	64B1-14	684-002	GT6D2	ST-6-002	TC-22	" "
14	.005	400	64B1-12	484-005	GT6D5	ST-6-005	TC-25	Tone Compensation
15	.02	400	64B1-24	484-02	GT4S2	ST-4-02	TC-12	" "
16	.25	400	64B1-28	484-.25	GT4P25	ST-4-25	TC-2	Phono Decoupling
17	.002	600	64B1-14	684-002	GT6D2	ST-6-002	TC-22	Audio Coupling
18	.1	400	64B1-20	484-.1	GT4P1	ST-4-1	TC-1	Screen Decoupling
19	.1	200	64B1-30	484-.1	GT2P1	ST-2-1	TC-1	AVC Filter
20	500	500		1468-0005	5W5T5	MO.5-35	1FM-35	AF Plate Bypass-Cer.
21	250	500	65B6-5	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter "
22	50	500	65B6-4	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap. "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	1 Meg.	½	75B2-10	D19-137X	AT-112	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 23A per instructions
24A	2 Meg.	½	75B1-24		AM-83-S	Tone Control
B	Shaft		Not Req.		KSS-3	Attach to 24A per instructions
C	Switch		" "		SW-A	" " " " "

RESISTORS

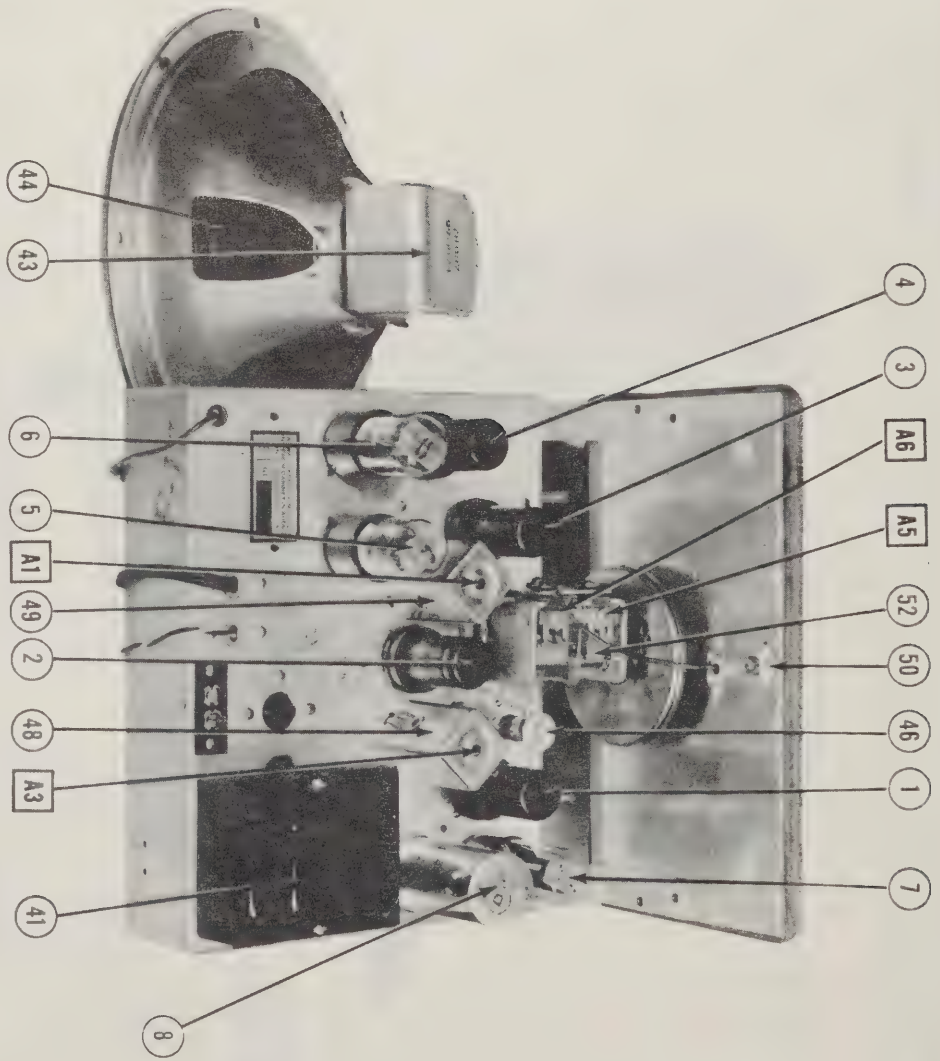
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
25	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Osc. Grid
26	15KΩ	2	60B20-153	BT-2-15K	Br.-Grn.-Or. Screen Dropping
27	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
28	27KΩ	½	60B8-273	BTS-27K	Red-Vi.-Or. Tone Compensation
29	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
30	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. AF Plate Load
31	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. Phase Inv. Grid
32	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. Phase Inv. Plate Load
33	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. Output Grid
34	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. " "
35	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. " "
36	680Ω	2	60B20-681	BT-2-680	Blue-Gray-Br. Output Cathode
37	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl. Voltage Dropping
38	120KΩ	½	60B8-124	BTS-120K	Br.-Red-Yl. Phono Bleeder
39	1800Ω	2	60B20-182	BT-2-1800	Br.-Gray-Red Filter
40	50Ω	5	61A1-6	AB-50	Surge Limiter

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
41	117VAC @ .45A	580VCT .056ADC	5.1VAC @ 2.0A	6.7VAC @ 2.15A	80B1	P-6312#	T22R04#	P-2952#

#Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
42	13KΩ CT	4.0Ω	725Ω CT	.6Ω	79A10	A-3823	T22S87	A-2901	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-120†		†Replace output transformer to match 6-8Ω voice coil.
43	PM	4.0Ω	78B37	Mod. P10-S	10A31	
	CONE DIA.	VC DIA.				
44	9-3/4"	3/4"				

R F COILS

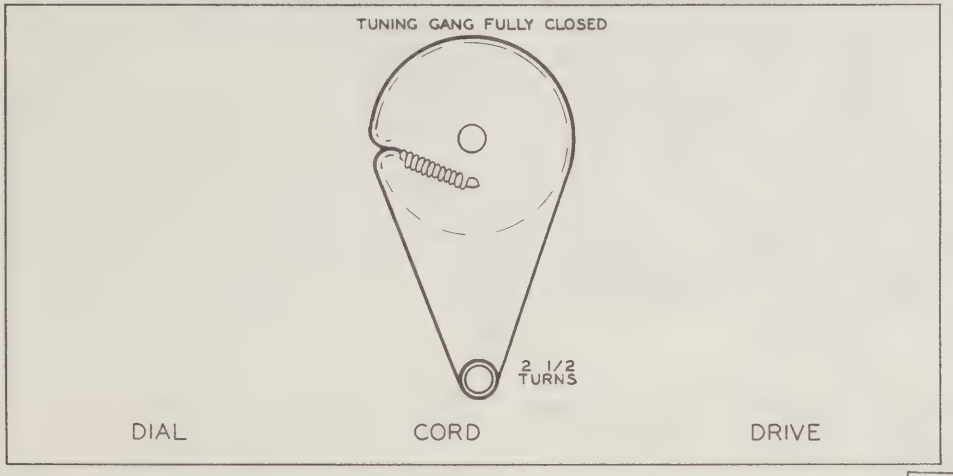
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	
45	Loop Ant.		.1Ω	95A1d-3		
46	Loop Load. Coil		2.2Ω	69A53		
47	Osc. Coil		6.5Ω	69A52	14-1060	
48	Input IF	20Ω	21Ω	72B52	16-6666	
49	Output IF	21Ω	20.2Ω	72B53	16-6667	

DIAL LIGHT

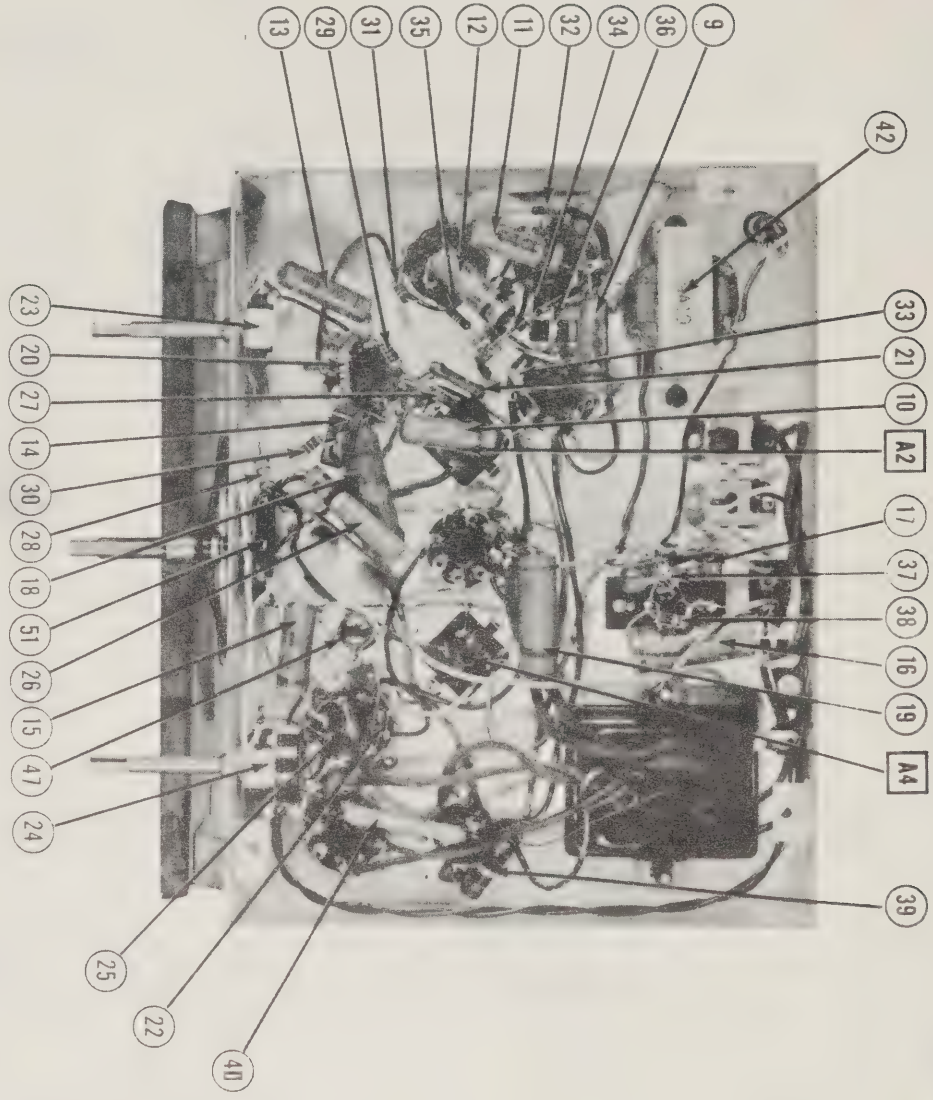
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ADMIRAL PART No.		
50	Bayonet	6-8	0.15	Brown	81A1-8		Type #47

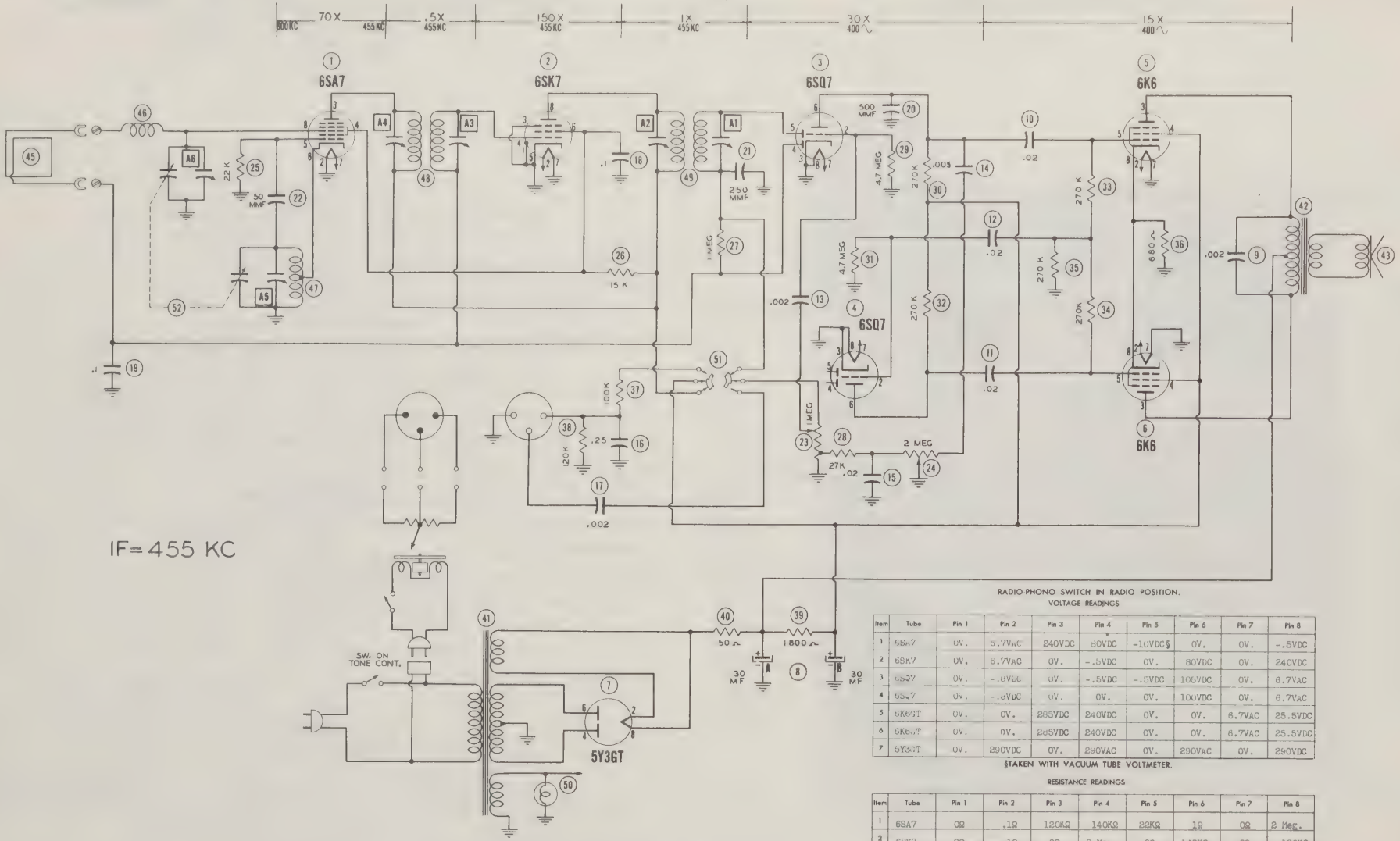
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
51	Switch	77A16-3	Radio-Phono
52	2 Gang Var. Cap.	A1706	(32-430MMF, 22-132MMF)
	Dial Scale	A1707	
	Dial Pointer	A1685	
	Knob	33A13-4	Volume, On-Off/Tone
	"	33B31-1	Radio-Phono
	"	33B31-2	Tuning



CHASSIS—BOTTOM VIEW





RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0V.	6.7VAC	240VDC	80VDC	-10VDC§	0V.	0V.	-.5VDC
2	6SK7	0V.	6.7VAC	0V.	-.5VDC	0V.	80VDC	0V.	240VDC
3	6SQ7	0V.	-.8VDC	0V.	-.5VDC	-.5VDC	105VDC	0V.	6.7VAC
4	6SQ7	0V.	-.8VDC	0V.	0V.	0V.	100VDC	0V.	6.7VAC
5	6K6GT	0V.	0V.	285VDC	240VDC	0V.	0V.	6.7VAC	25.5VDC
6	6K6GT	0V.	0V.	285VDC	240VDC	0V.	0V.	6.7VAC	25.5VDC
7	5Y3GT	0V.	290VDC	0V.	290VAC	0V.	290VAC	0V.	290VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0Ω	.1Ω	120KΩ	140KΩ	22KΩ	1Ω	0Ω	2 Meg.
2	6SK7	0Ω	.1Ω	0Ω	2 Meg.	0Ω	140KΩ	0Ω	120KΩ
3	6SQ7	0Ω	4.7 Meg.	0Ω	2 Meg.	1 Meg.	390KΩ	0Ω	.1Ω
4	6SQ7	0Ω	4.7 Meg.	0Ω	INF.	INF.	390KΩ	0Ω	.1Ω
5	6K6GT	0Ω	0Ω	120KΩ	120KΩ	540KΩ	INF.	.1Ω	680Ω
6	6K6GT	0Ω	0Ω	120KΩ	120KΩ	540KΩ	INF.	.1Ω	680Ω
7	5Y3GT	INF.	120KΩ	INF.	800Ω	INF.	20Ω	INF.	120KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

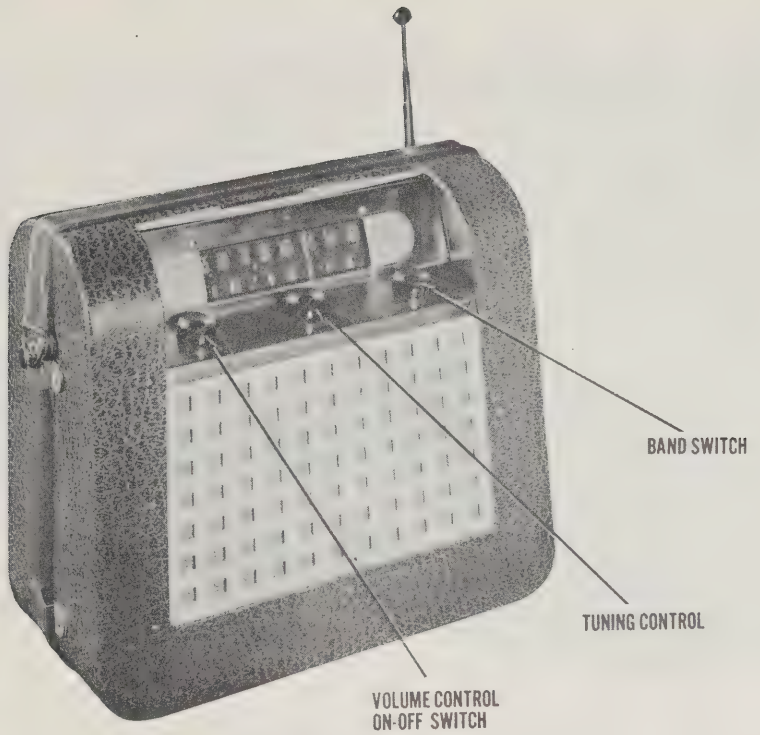
©Howard W. Sams & Co., Inc. 1949

492-2

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

AIRCASTLE MODEL G-521
BATTERY-LINE OPERATED



AIRCASTLE MODEL G-521
BATTERY-LINE OPERATED

TRADE NAME	Aircastle, Model G-521
SUPPLIER	Speigel Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 1LA6 Converter, 1LN5 1st IF Amp., 1LN5 2nd IF Amp., 1LH4 Det.-AVC-AF, 3LF4 Power Output.
POWER SUPPLY RATING	110-120 Volts AC-DC or 9 Volts "A" Supply & 90 Volt "B" Supply .150 Amp. @ 117 Volts AC or 60MA @ 9 Volts DC & 6 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1620KC SHORT WAVE 5.6-18.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative postion to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to stator of left section of tuning capacitor. Low side to B-.	455KC	BC (Counter-clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.01 MFD in series with 400Ω carbon res.	High side to ext. ant. Low side to chassis.	18.5MC	SW (Clock-wise)	"	"	A5	Adjust for maximum output
3	"	"	6.0MC	"	Tune for maximum output.	"	A6	Rock tuning capacitor and adjust for maximum output. Repeat Step 2.
4	"	"	18.0MC	"	"	"	A7	Rock tuning capacitor and adjust for maximum output.
5		Loop	1620KC	BC	Tuning cap. fully open.	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
6		"	1550KC	"	Tune for maximum output.	"	A9	Adjust for maximum output
7		"	600KC	"	"	"	A10	Rock tuning cap. and adjust for maximum output. Repeat Steps 5, 6 & 7 until no further improvement can be made.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-3 SET #54-FOLDER #3

PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL C-521

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1LA6	1LA6	7AK	
2	1st IF Amp.	1LN5	1LN5	7AO	
3	2nd IF Amp.	1LN5	1LN5	7AO	
4	Det.-AVC-AF	1LH4	1LH4	5AG	
5	Power Output	3LF4	3LF4	6BB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150		AF888D	UP44315C	DY-419	EL452	● Filter
B	40	150	CE1-4A81					■ "
C	40	150						▲ "
D	20	150		PRS150-20	BR4015	M-20-150	UT-201	"
7	25	25	CE86	PRS25-25	BR252A	M-25-25	TA-25	Filament Bypass
8	25	25	CE86	PRS25-25	BR252A	M-25-25	TA-25	"
9	.002	600		684-002	GT6D2	ST-6-002	TC-22	Output Plate Bypass
10	.002	600		684-002	GT6D2	ST-6-002	TC-22	Audio Coupling
11	.01	600		684-01	GT6S1	ST-6-01	TC-11	" "
12	.003	600		684-003	GT6D3	ST-6-003	TC-23	Tone Compensation
13	.05	400		484-05	GT4S5	ST-4-05	TC-15	AVC Filter
14	.01	600		684-01	GT6S1	ST-4-01	TC-11	Conv. Screen Bypass
15	.05	400		484-05	GT4S5	ST-4-05	TC-15	Filament Bypass
16	.05	400		484-05	GT4S5	ST-4-05	TC-15	" "
17	.1	400		484-.1	GT4P1	ST-4-1	TC-1	" "
18	.1	400		484-.1	GT4P1	MPH-4-1	TC-1	Line Filter
19	.1	400		484-.1	GT4P1	ST-4-1	TC-1	Isolation
20	.2	400		484-.2	GT4P2	ST-4-2	TC-2	RF Bypass Power Supply
21	.05	400		484-05	GT4S5	ST-4-05	TC-15	AVC Filter
22	100			1468-0001	5W5T1	MO.5-31	1FM-31	Oscillator Grid
23	15						MS-415	Fixed Trimmer
24	5100							Fixed Padder
25	100			1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass
26	100			1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass
27	100			1468-0001	5W5T1	MO.5-31	1FM-31	IF Coupling
28	470			1468-0005	5W5T5	MO.5-35	1FM-35	Tone Compensation

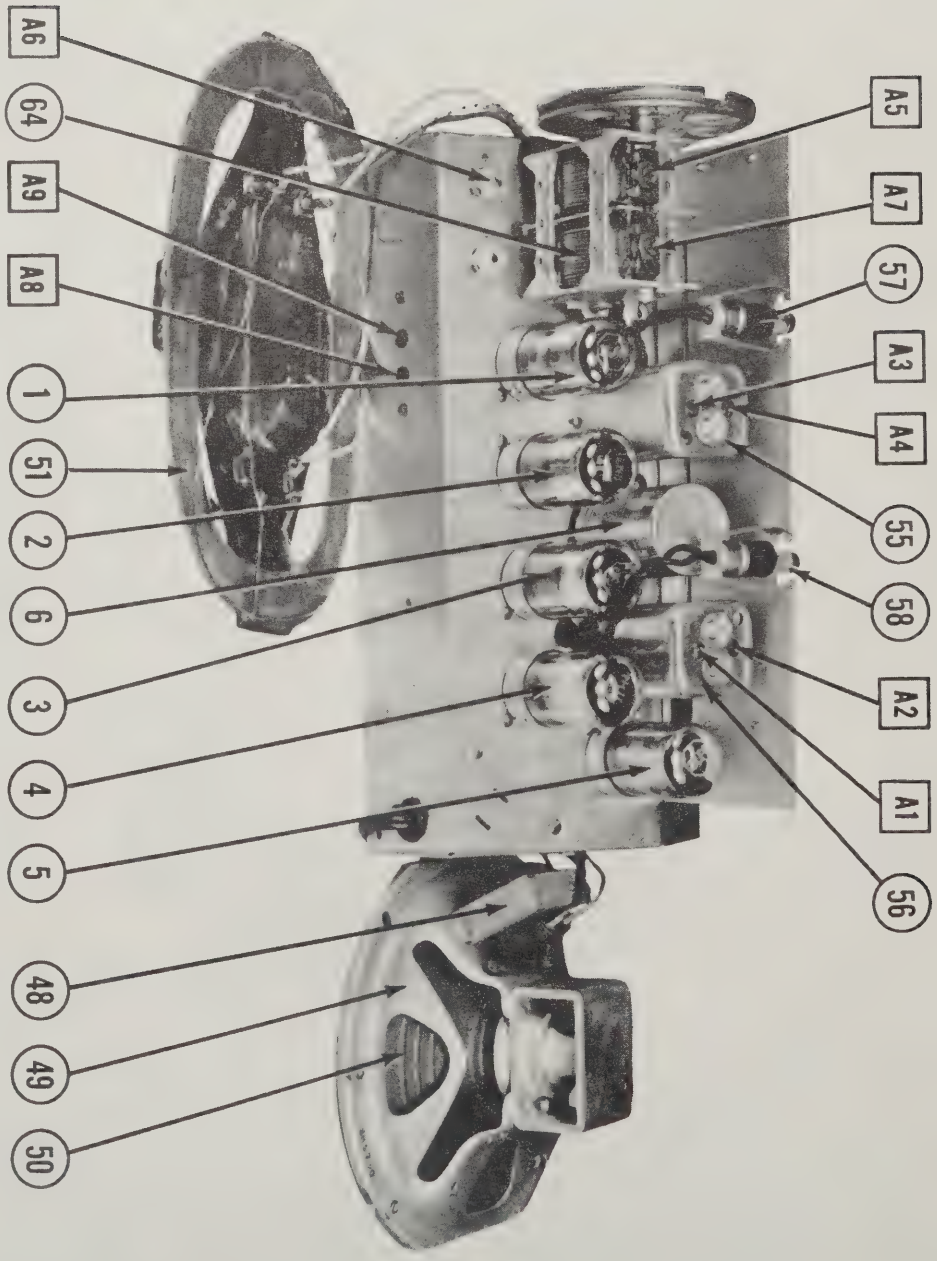
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29A	500KΩ	½	RP10-504	D13-133X	AT-78	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 29A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
30	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
31	39KΩ	½		BTS-39K	Or.-White-Or. Converter Screen Dropping
32	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
33	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. " "
34	33KΩ	½		BTS-33K	Or.-Or.-Or. IF Plate Load
35	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AVC Network
36	33KΩ	½		BTS-33K	Or.-Or.-Or. Tone Compensation
37	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AF Grid
38	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
39	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
40	47Ω	½		BW-½-47	Yl.-Vi.-Blk. Parasitic Suppressor
41	47KΩ	½		BTS-47K	Yl.-Vi.-Or. IF Grid
42	820Ω	½		BTS-820	Gray-Red-Br. Filament String
43	820Ω	½		BTS-820	Gray-Red-Br. " "
44	15Ω	1			Surge Limiter
45	330Ω	1		BW-1-330	Or.-Or.-Br. Pilot Light Shunt
46	2200Ω	1		BTA-2200	Red-Red-Red Filter
47A	1200Ω	10		AB-1250	Filament String
B	1350Ω			AB-1250	" "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
48	6800Ω	3.8Ω	470Ω	.6Ω	Part of EH-11	A-3878	T22S47	A-2931	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
49	FIELD PM	VC IMP. 3.8Ω	EH-11	ST-108 Mod. P6-X	6A15	
50	CONE DIA. 6"	VC DIA. 3/4"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
51	Loop Ant.	.1Ω	2Ω	LL-13		
52	SW Ant.Coil		0Ω	LR-11		
53	BC Osc.Coil	1Ω	5Ω	LO-8	14-1040	
54	SW " "	.3Ω	.1Ω	LO-7		
55	Input IF	11Ω	20Ω	TM2-14	16-6658	
56	Output IF	14Ω		TM2-15	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRCASTLE PART No.		
57	Bayonet	2.0	0.06	Pink			Type 49
58	"	"	"	"			" "

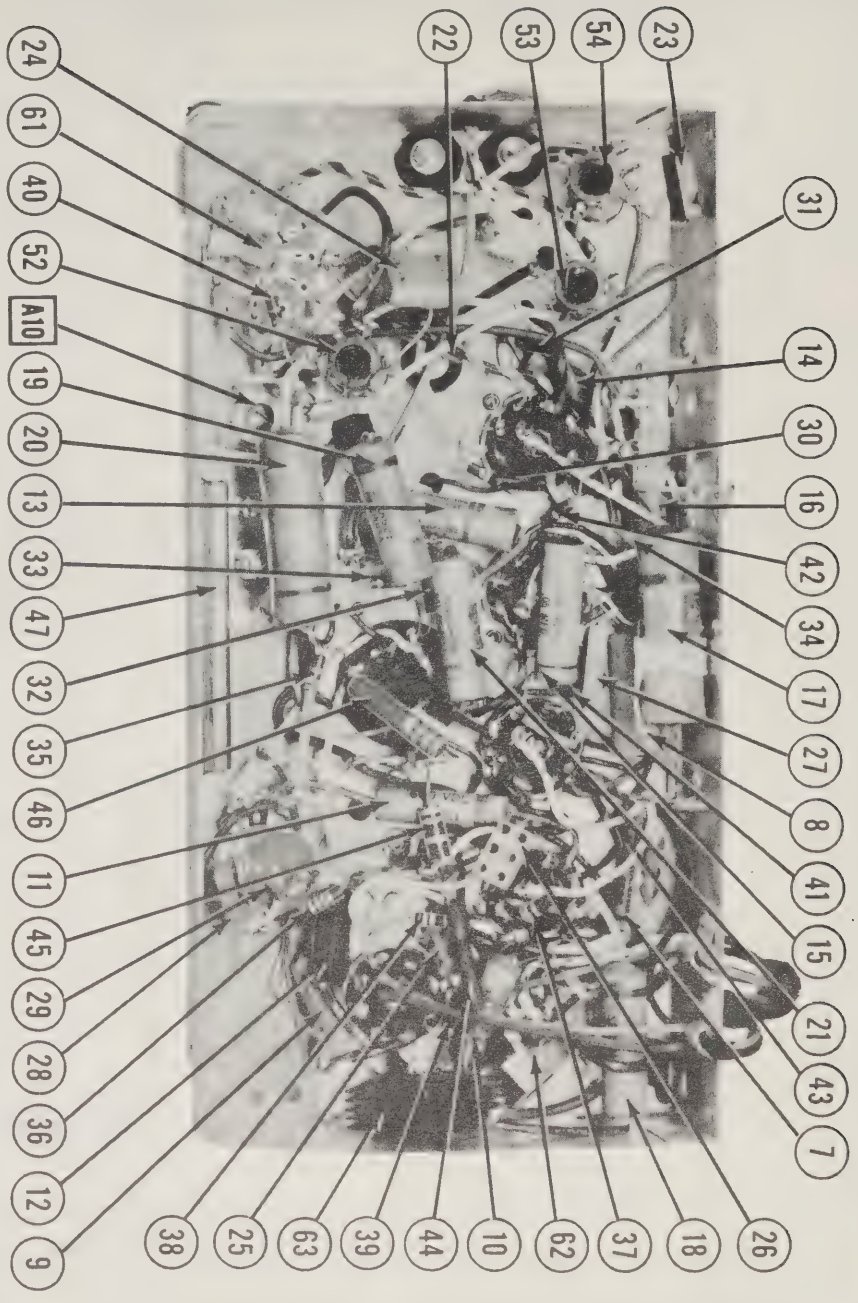
BATTERIES

ITEM No.	VOLTAGE	AIRCASTLE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
59	9V "A"		(2)#746			(2) G3			2 Used in Series
60	90V "B"			(2)#482			(2) M30		" " " "

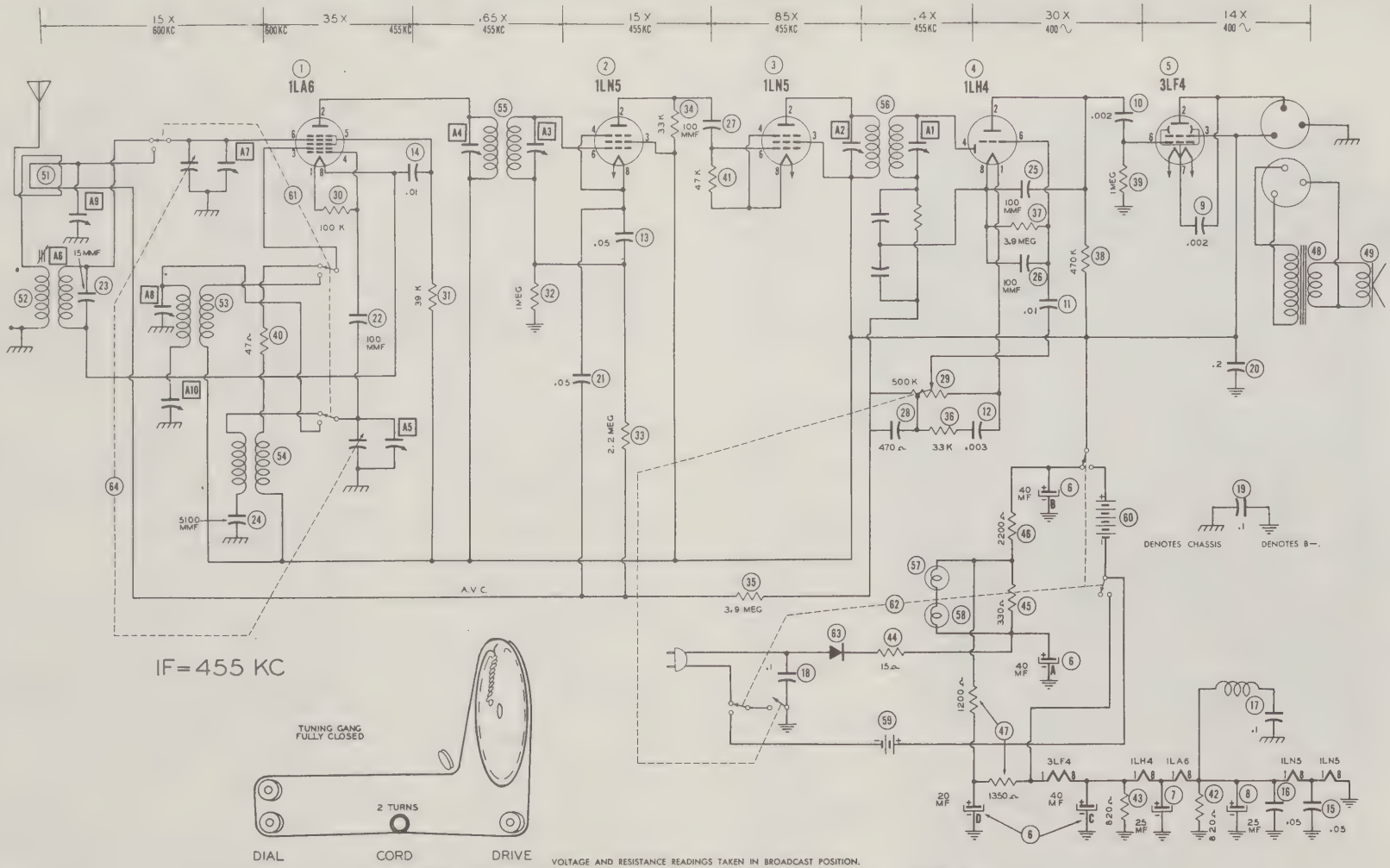
MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
61	Bandswitch		
62	Switch		Power Change-Over (TPDT)
63	Rectifier		Selenium
64	2 Gang Var. Cap	CV-14	19-478MMF (each section)

CHASSIS—BOTTOM VIEW



AIRCASTLE MODEL G-521



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	4VDC	92VDC	92VDC	-5.6VDC§	46VDC	.2VDC	92VDC	2.6VDC
2	1LN5	2.6VDC	55VDC	92VDC	1.3VDC	1.3VDC	.1VDC	0V.	1.3VDC
3	1LN5	1.3VDC	92VDC	92VDC	0V.	0V.	0V.	0V.	0V.
4	1LH4	5.2VDC	68VDC	4VDC	1.2VDC	92VDC	.2VDC	0V.	44VDC
5	3LF4	7.8VDC	90VDC	92VDC	0V.	0V.	0V.	6.5VDC	1.2VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	*	4.7KΩ	4.7KΩ	100KΩ	44KΩ	2 Meg.	4.7KΩ	*
2	1LN5	*	36KΩ	4.7KΩ	*	*	1 Meg.	0Ω	*
3	1LN5	*	4.7KΩ	4.7KΩ	0Ω	0Ω	50KΩ	0Ω	0Ω
4	1LH4	*	475KΩ	*	600KΩ	4.7KΩ	4 Meg.	0Ω	*
5	3LF4	*	5KΩ	4.7KΩ	INF.	0Ω	1.1 Meg.	*	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1949

492-3

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting a jumper across the two outside terminals of the volume control during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volts.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

AIRLINE MODELS 64BR-7300A, 64BR-7310A, 64BR-7320A

AIRLINE MODEL 64BR-7320A

TRADE NAME	Airline, Models 64BR-7300A, 64BR-7310A, 64BR-7320A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES (SEVEN)	Types, 12SQ7 Mic. 1 Pre-Amp., 12SQ7 Mic. 2 Pre-Amp., 6SJ7 Mixer Amp., 6V6GT Driver, (2) 6L6GA Power Output, 5U4G Rectifier.
POWER SUPPLY	105-125 Volts AC RATING .95 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SQ7	0V.	-.1VDC	.2VDC	.2VDC	.2VDC	60VDC	0V.	-7.7VDC
2	12SQ7	0V.	-.1VDC	.2VDC	.2VDC	.2VDC	60VDC	-7.7VDC	-15VDC
3	6SJ7	0V.	0V.	1.2VDC	0V.	1.2VDC	22.5VDC	6.6VAC	40VDC
4	6V6GT	0V.	6.6VAC	205VDC	205VDC	0V.	0V.	0V.	25VDC
5	6L6GA	0V.	6.6VAC	360VDC	240VDC	-15VDC	-15VDC	0V.	3.2VDC
6	6L6GA	0V.	6.6VAC	360VDC	240VDC	-15VDC	-15VDC	0V.	3.2VDC
7	5U4G	0V.	370VDC	0V.	355VAC	0V.	355VAC	-17VDC	370VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SQ7	0Ω	2.2 Meg.	560Ω	560Ω	560Ω	630KΩ	0Ω	13Ω
2	12SQ7	0Ω	2.2 Meg.	560Ω	560Ω	560Ω	630KΩ	13Ω	26Ω
3	6SJ7	0Ω	0Ω	2200Ω	280KΩ	2200Ω	1.4 Meg.	.1Ω	370KΩ
4	6V6GT	0Ω	.1Ω	110KΩ	110KΩ	560KΩ	INF.	0Ω	2200Ω
5	6L6GA	0Ω	.1Ω	100KΩ	110KΩ	230Ω	26Ω	0Ω	33Ω
6	6L6GA	0Ω	.1Ω	100KΩ	110KΩ	230Ω	26Ω	0Ω	33Ω
7	5U4G	INF.	100KΩ	INF.	60Ω	INF.	62Ω	26Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

AIRLINE MODEL 64BR-7320A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. #1 Pre-Amp.	12SQ7	12SQ7	8Q	
2	Mic. #2 Pre-Amp.	12SQ7	12SQ7	8Q	
3	Mixer Amp.	6SJ7	6SJ7	8N	
4	Driver	6V6GT	6V6GT	7AC	
5	Power Output	6L6GA	6L6GA	7AC	
6	" "	6L6GA	6L6GA	7AC	
7	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8	16	475	BEA-8C-10856	AF4J	UP2050	DY-20-525	EL-2	Filter
9	8	450	BEA-8C-10857	AF2J	UP1045	DY-10-450	EL-1	"
10A	8	450	BEA-8C-10858	AF22J	UP1145	DY-2x10-450	EL-210	"
B	8	450						Decoupling
11	100	50	BEA-8C-10960	PRS50/100	BRH-501	M-100-50	UHC-105	Bias Filter
12	10	25	BEA-8C-10959	PRS25/10	BR102A	M-10-25	TA-10	AF Cathode Bypass
13	10	25	BEA-8C-10959	PRS25/10	BR102A	M-10-25	TA-10	" " "
14	.05	600	BEC-8D-10982	684-05	GT6S5	ST-6-05	TC-15	Audio Coupling
15	.003	600	BEC-8D-11013	684-003	GT6D3	ST-6-003	TC-23	Tone Compensation
16	.05	200	BEC-8D-11012	684-05	GT2S5	ST-4-05	TC-15	" "
17	.1	600	BEC-8D-10983	684-.1	GT6P1	ST-6-1	TC-1	AF Screen Bypass
18	.05	600	BEC-8D-10982	684-05	GT6S5	ST-6-05	TC-15	Audio Coupling
19	.05	600	BEC-8D-10982	684-05	GT6S5	ST-6-05	TC-15	" "

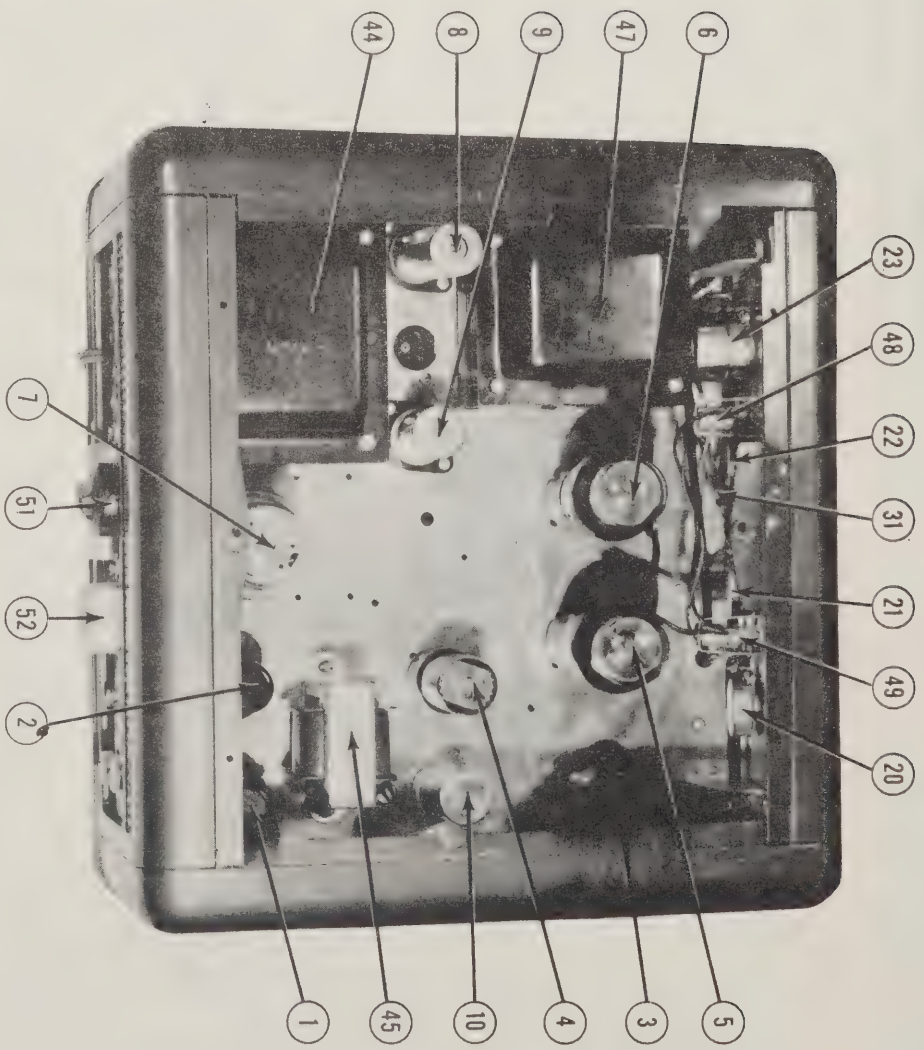
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	1 Meg.	½	BEA-10B-10646	D13-137	M-63-Z	Mike 1 Control
B	Shaft		Not Req.	A	Not Req.	Attach to 20A per instructions
21A	1 Meg.	½	BEA-10B-10846	D13-137	M-63-Z	Mike 2 Control
B	Shaft		Not Req.	A	Not Req.	Attach to 21A per instructions
22	2 Meg.	½	BEA-10B-10847			Phono Control tapped @ 1 Meg. ½
23A	1 Meg.	½	BEA-11B-10845	D13-137	M-61-S	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 23A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
24	2.2 Meg.	½	BEC-9B1-102	BTS-2.2 Meg.	Red-Red-Grn. 1st Mic. Amp. Grid
25	2.2 Meg.	½	BEC-9B1-102	BTS-2.2 Meg.	Red-Red-Grn. 2nd Mic. Amp. Grid
26	470KΩ	½	BEC-9B1-94	BTS-470K	Yl.-Vi.-Yl. 1st Mic. Amp. Plate Load
27	470KΩ	½	BEC-9B1-94	BTS-470K	Yl.-Vi.-Yl. 2nd Mic. Amp. Plate Load
28	560Ω	½	BEC-9B1-59	BTS-560	Grn.-Blue-Br. 1st & 2nd Mic. Amp. Cathode
29	56KΩ	½	BEC-9B1-83	BTS-56K	Grn.-Blue-Or. Isolation
30	56KΩ	½	BEC-9B1-83	BTS-56K	Grn.-Blue-Or. "
31	560KΩ	½	BEC-9B1-95	BTS-560K	Grn.-Blue-Yl. "
32	2200Ω	½	BEC-9B1-66	BTS-2200	Red-Red-Red Mixer Cathode
33	1.2 Meg.	½	BEC-9B1-99	BTS-1.2 Meg.	Br.-Red-Grn. Mixer Screen Dropping
34	270KΩ	½	BEC-9B1-91	BTS-270K	Red-Vi.-Yl. Mixer Plate Load
35	22KΩ	½	BEC-9B1-78	BTS-22K	Red-Red-Or. Tone Compensation
36	56KΩ	½	BEC-9B1-83	BTS-56K	Grn.-Blue-Or. Decoupling
37	560KΩ	½	BEC-9B1-95	BTS-560K	Grn.-Blue-Yl. Driver Grid
38	2200Ω	½		BTS-2200	Red-Red-Red Driver Cathode
39	22KΩ	½	BEC-9B1-78	BTS-22K	Red-Red-Or. Driver Trans. Shunt
40	22KΩ	½	BEC-9B1-78	BTS-22K	Red-Red-Or. Driver Trans. Shunt
41	33Ω	1	BEC-9B2-44	BW-1-33	Or.-Or.-Blk. Output Cathode
42	3500Ω	10	BEB-9C-11397	AB-3500	Filter
43	1200Ω	2	BEC-9B4-63	BT-2-1200	Br.-Red-Red Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
44	117V AC @ .95A	710V CT .122ADC	5.3V AC @ 3.0A	6.6V AC @ 2.8A	B-12A-10859	P-6314	T22R07	P-2955†

†Add series resistor to reduce plate voltage.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~	AIRLINE PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
45	.032 A.	500Ω	20 Henries	B-16B-10862	C-1708#	T20C53#	C-2987#	#Drill one new mounting hole.

TRANSFORMER (DRIVER)

ITEM No.	RATING			REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE PRI. to ½ SEC.	DC RES. PRI.	DC RES. SEC.	AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
46	2 to 1	630Ω	410Ω CT	B-12C-10861	A-4752		A-2921*	*Use 1½:1 turns ratio

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
47	6000Ω CT	2Ω 2.7Ω 4Ω 8Ω 500Ω	340Ω CT	.2Ω .25Ω .29Ω .4Ω 10Ω	B-12C-10860	A-3307#		A-3130#	#Drill new mounting holes.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
48	Bayonet	6-8	0.15	Brown	BEB-46A-10793		Type 47
49	"	"	"	"	"		" "

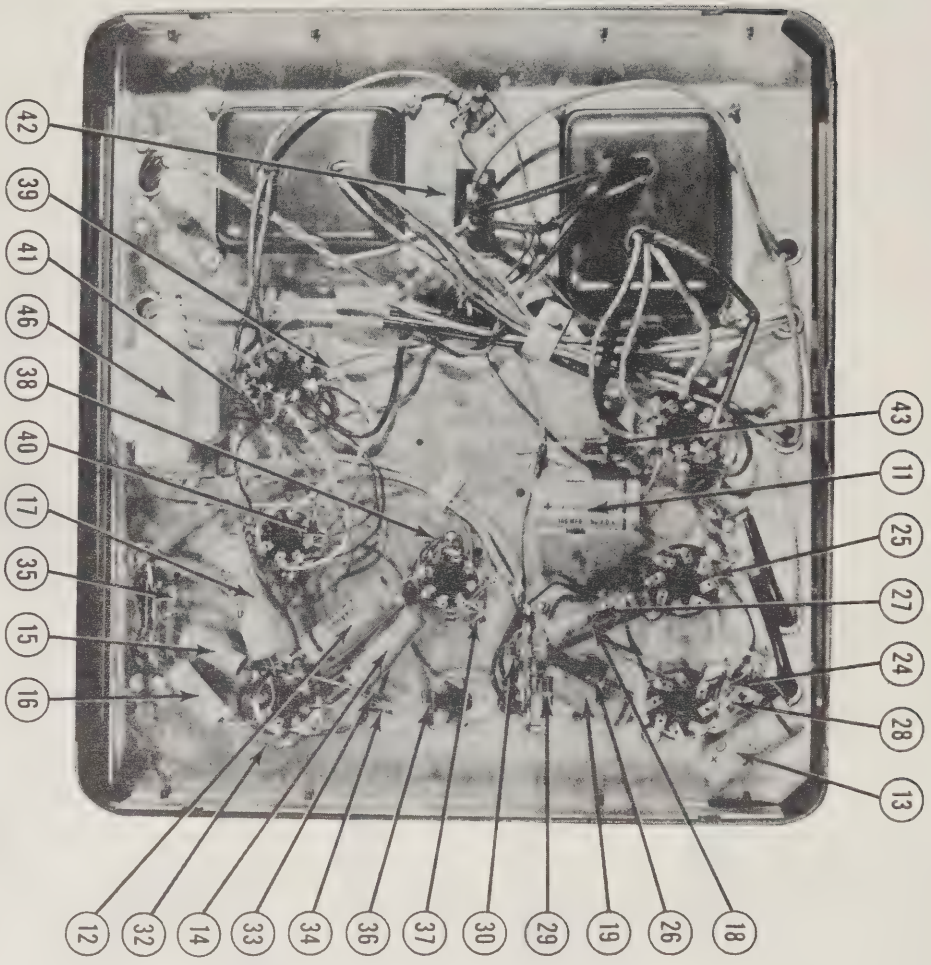
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	AIRLINE PART No.	ASTATIC PART No.	
50	BE8K-12065	L-70A	L-70S Original Part

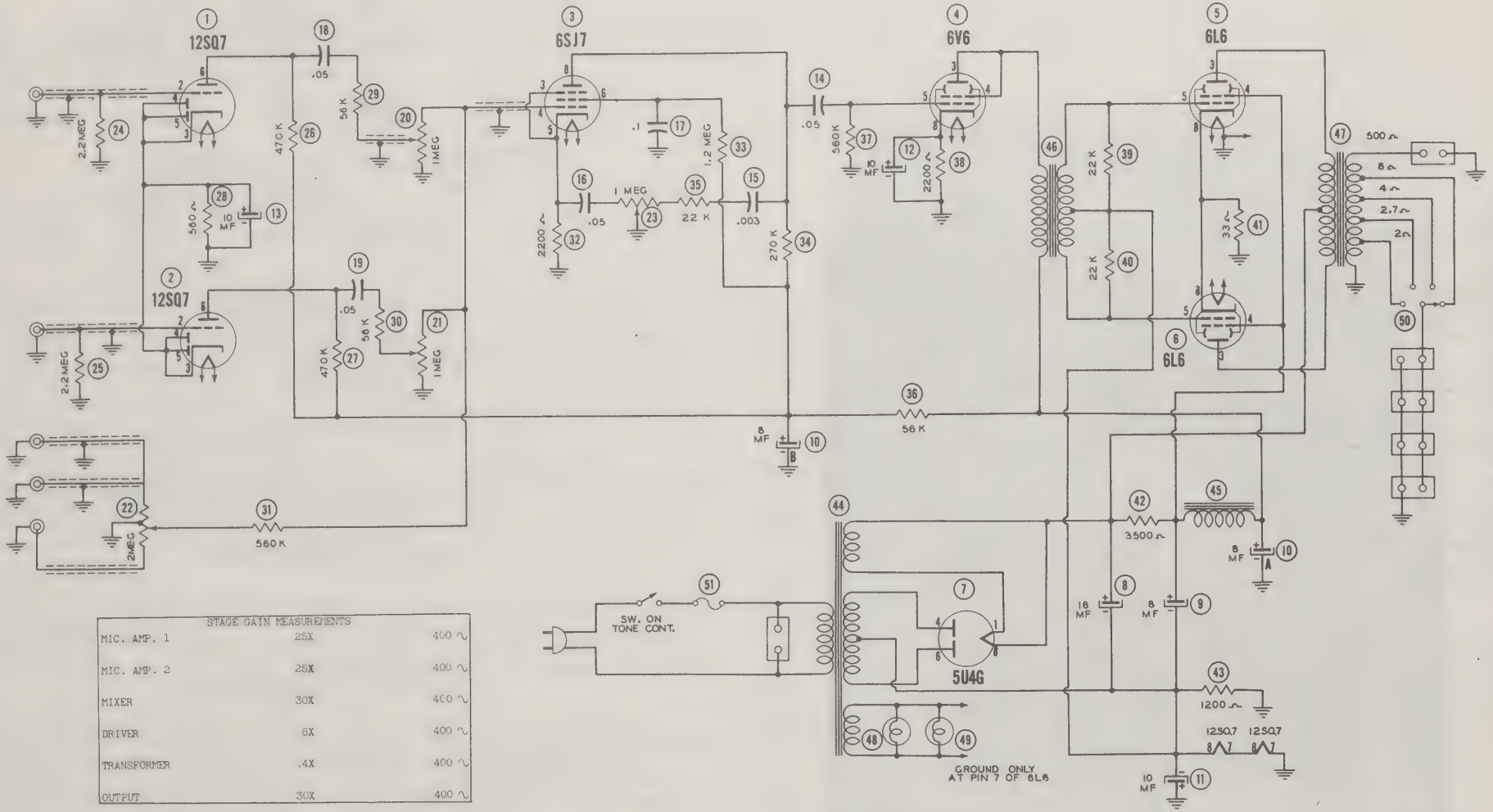
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
51	Switch	BEA-20H-10852	Speaker
52	Fuse	BEA-46B-2717	2 Amp.
	Dial Plate	BEB-2C-10815	
	Knob	BEA-5B-10848-52	

CHASSIS—BOTTOM VIEW



AIRLINE MODEL 64BR-7320A



STAGE GAIN MEASUREMENTS		
MIC. AMP. 1	25X	400 ∿
MIC. AMP. 2	25X	400 ∿
MIXER	30X	400 ∿
DRIVER	8X	400 ∿
TRANSFORMER	.4X	400 ∿
OUTPUT	30X	400 ∿

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1949

CLARION
MODEL 12110M

CLARION
MODEL 12110M

CLARION MODEL 12110M

TRADE NAME	Clarion, Model 12110M
MANUFACTURER	Warwick Mfg. Corp., 4640 W. Harrison St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (TEN)	Types, 12BA6 FM RF Amp., 12BE6 FM Converter, 12BE6 AM Converter, 12BA6 AM IF Amp., 12BA6 FM 1st IF Amp., 12BA6 FM 2nd IF Amp., 12BA6 FM 3rd IF Amp., 6AL5 FM Detector, 12AT6 AM Det.-AVC-AF, 50L6GT Power Output.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88 - 108MC

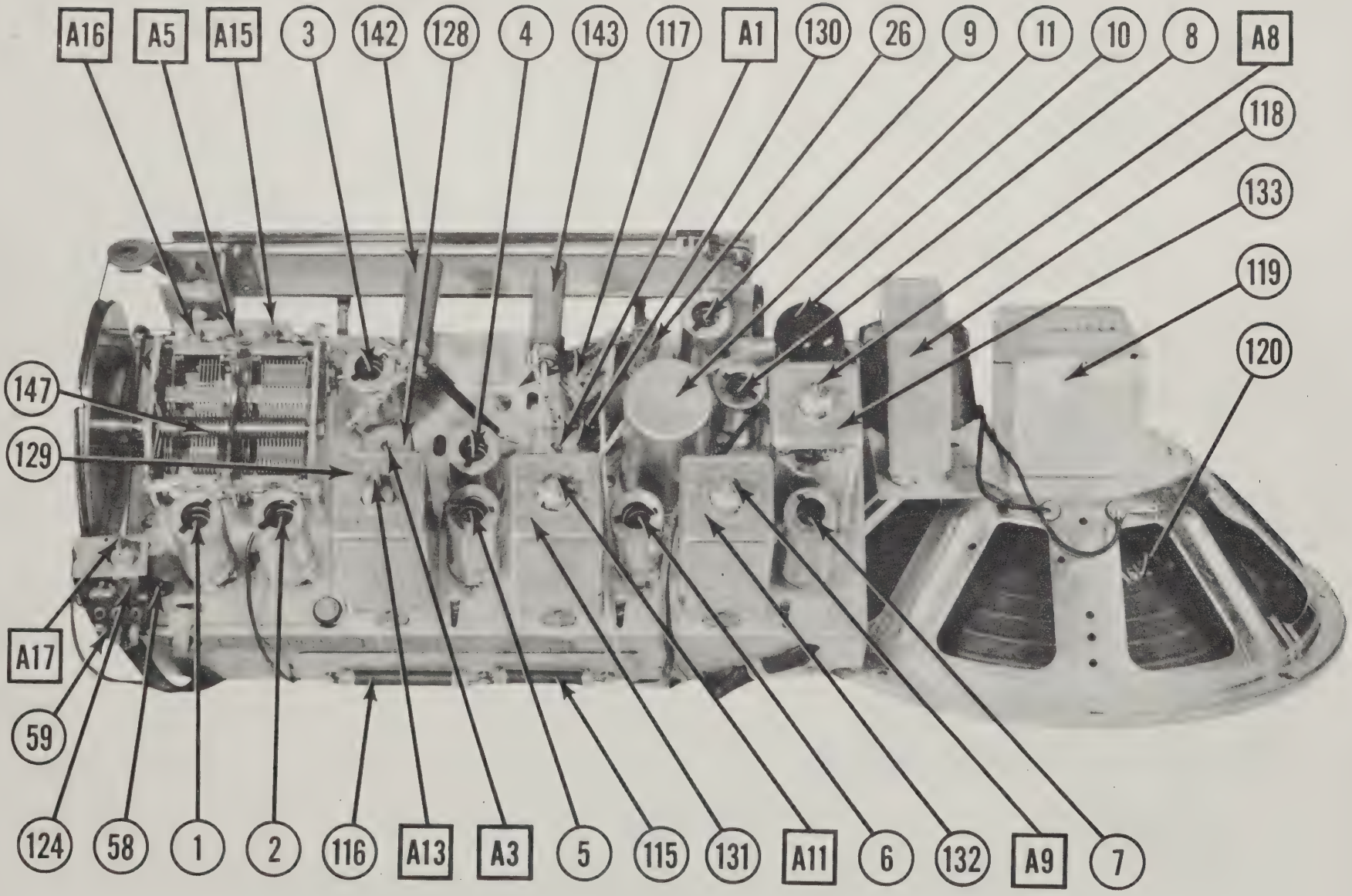
DISASSEMBLY INSTRUCTIONS

1. Remove six screws holding back cover. Remove back cover.
2. Remove AM and FM leads from AM loop and FM terminal on back cover.
3. Disconnect pick-up and motor leads by removing solderless connectors.
4. Disconnect speaker leads by removing solderless connectors.
5. Remove four next type nuts holding speaker. Remove speaker.
6. Remove four push-on type control knobs.
7. Remove four screws holding chassis. Remove chassis.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-5 SET #54-FOLDER #5


A16
A5
A15
3
142
128
4
143
117
A1
130
26
9
11
10
8
A8
118
133
119
120
147
129
A17
59
124
58
1
2
116
A13
A3
5
115
131
A11
6
132
A9
7

A
B
C
A2
A4
A7
A10
A12
A14

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	12BA6	12BA6	7BK	
2	FM Conv.	12BE6	12BE6	7CH	
3	AM Conv.	12BE6	12BE6	7CH	
4	AM IF Amp.	12BA6	12BA6	7BK	
5	FM 1st IF Amp.	12BA6	12BA6	7BK	
6	FM 2nd IF Amp.	12BA6	12BA6	7BK	
7	FM 3rd IF Amp.	12BA6	12BA6	7BK	
8	FM Detector	6AL5	6AL5	6BT	
9	AM Det.-AVC-AF	12AT6	12AT6	7BT	
10	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CLARION PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11A	40	350		AF88J	UP4445	DY-2x40-450	EL-240	■ Filter -See Note
B	20	450		PRS450/20	BR2045	M-20-450	UT-20	☁ "
C	40	250						▲ "
12	60	150	A18-285	PRS150-50	EZ3315*	M-50-150	UT-501	Voltage Doubler
13	4	150	A18-273	PRS150-4	BR415	M-4-450	UT-41	Stabalizing Cap.
14	.05	400	A16-158	484-05	GT4S5	ST-4-05	TC-15	Line Filter
15	.005	1000		684-005	GT6D5	ST-6-005	TC-25	Output Plate Bypass
16	.005	600	A16-153	684-005	GT6D5	ST-6-005	TC-25	Audio Coupling
17	.01	1000		684-01	GT6S1	ST-6-01	TC-11	Tone Compensation
18	.05	400	A16-158	484-05	GT4S5	ST-4-05	TC-15	" "
19	.01	200	A16-165	484-01	GT2S1	ST-4-01	TC-11	RF Bypass Pwr. Supply
20	.01	200	A16-165	484-01	GT2S1	ST-4-01	TC-11	Audio Coupling
21	.01	400	A16-156	484-01	GT4S1	ST-4-01	TC-11	RF Bypass Pwr. Supply
22	.02	400	A16-150	484-02	GT4S2	ST-4-02	TC-12	Tone Compensation
23	.01	200	A16-165	484-01	GT2S1	ST-4-01	TC-11	RF Bypass Pwr. Supply
24	.1	200	A16-157	484-.1	GT2P1	ST-2-1	TC-1	AVC Filter
25	.01	400	A16-156	484-01	GT4S1	ST-4-01	TC-11	RF Bypass Pwr. Supply
26	.02	400	A16-150	484-02	GT4S2	ST-4-02	TC-12	Changer Base Iso.
27	.05	400	A16-158	484-05	GT4S5	ST-4-05	TC-15	AVC Filter
28	.002	200	A16-178	484-002	GT6D2	ST-6-002	TC-22	Audio Coupling
29	.003	200	A16-180	484-003	GT6D3	ST-6-003	TC-23	De-emphasis
30	.01	120	A16-163	484-01	GT2S1	ST-4-01	TC-11	3rd IF Cathode Bypass
31	.01	120	A16-163	484-01	GT2S1	ST-4-01	TC-11	2nd IF Cathode Bypass
32	.01	120	A16-163	484-01	GT2S1	ST-4-01	TC-11	1st IF Cathode Bypass
33	100	300	A15-190	1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling-Cer.
34	250	300		1468-00025	5W5T25	MO.5-325	1FM-325	RF Bypass "
35	100	300	A15-196	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass-Cer.
36	5000	300	A16-177	1467-005	1D5D5	MW.5-25	1FM-25	3rd IF Plate Decoup.-Cer.
37	5000	300	A16-177	1467-005	1D5D5	MW.5-25	1FM-25	3rd IF Screen Byp.-Cer.
38	5000	300	A16-177	1467-005	1D5D5	MW.5-25	1FM-25	AF Plate Decoupling-"
39	470	500	A15-200	1468-0005	5W5T5	MO.5-35	1FM-35	3rd IF Grid Filter
40	5000	300	A16-177	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Plate Decoup-Cer.
41	5000	300	A16-177	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Screen Byp.-Cer.
42	250	500	A15-176	1468-00025	5W5T25	MO.5-325	1FM-325	AM Diode RF Filter
43	470	500	A15-200	1468-0005	5W5T5	MO.5-35	1FM-35	AVC Filter
44	5000	300	A16-177	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Plate Decoup-Cer.
45	5000	300	A16-177	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Screen Byp.-Cer.
46	50	300	A15-191	1468-00005	5W5Q5	MO.5-45	1FM-45	AM Osc. Grid Cap. "
47	470	500	A15-200	1468-0005	5W5T5	MO.5-35	1FM-35	AVC Filter Silver
48	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	Conv. Plate Decoup.-Cer.
49	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	Conv. Screen Byp. "
50	20	300	A15-193		5R5Q2	MOS.5-42	MS-42	Fixed Trimmer "
51	10	300	A15-197	1469-00001	5R5Q1	MOS.5-41	MS-41	FM Osc. Grid Cap. "
52	50	300	A15-194	1469-00005	5R5Q5	MOS.5-45	MS-45	Fixed Padder "
53	20	300	A15-198	1468-000025	5W5Q2	MO.5-42	1FM-42	RF Coupling "
54	20	300	A15-198	1468-000025	5W5Q2	MO.5-42	1FM-42	" " "
55	75	300	A15-195	1469-000075				Fixed Padder "
56	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	RF Screen Bypass "
57	470	500	A15-200	1468-0005	5W5T5	MO.5-35	1FM-35	RF Cathode Byp.-Silver
58	50	300	A15-194	1469-00005	5R5Q5	MOS.5-45	MS-45	RF Coupling Cer.
59	50	300	A15-194	1469-00005	5R5Q5	MOS.5-45	MS-45	Dipole Iso. "

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
113	15Ω	3	A60-738	AB-15	Br.-Grn.-Blk. Rect. Ballast
114	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. Series Phono
115			A60-734		Neg. Temp. Co.-See Note
116			A60-735		Neg. Temp. Co. " "

Note-Special compensating res. order replacement from manufacturer.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: CLARION PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
117	.11 A.	166Ω	4.5 Henries	A33-225		T20C54		

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
118	3260Ω	3.6Ω	200Ω	.2Ω	B80-241	A-3825#	T22S74	A-2905#	#Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-120†		†Replace output transformer to match 6-8Ω voice coil.
119	PM	3.6Ω	C79-358	Mod. P10-S	10A31	
	CONE DIA.	VC DIA.				
120	9½"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: MEISSNER PART No.
121	Loop Ant.		1.3Ω	S84-166	
122	Loop Load. Coil		2.2Ω	A10-504	
123	FM Dipole		0Ω	SB82-53	
124	FM Ant.Coil	.2Ω	.2Ω	SB10-488	
125	FM RF Coil		0Ω	B10-489	
126	BC Osc.Coil	.9Ω	5.2Ω	B10-491	14-1060
127	FM " "		0Ω	B10-490	
128	AM 1st IF	17.3Ω	20Ω	A10-499	16-6678
129	FM 1st IF	.8Ω	.1Ω	SA10-493	
130	AM 2nd IF	15.8Ω	16.7Ω	A10-500	16-6678
131	FM 2nd IF	.8Ω	.1Ω	SC10-494	
132	FM 3rd IF	.8Ω	.1Ω	SC10-494	
133	FM Ratio Det.	1.5Ω	.3Ω	SC10-492	
134	Fil. Choke		.1Ω	A33-227	
135	" "		.6Ω	A33-226	
136	" "		.6Ω	A33-226	
137	" "		.6Ω	A33-226	
138	" "		.6Ω	A33-226	
139	" "		.6Ω	A33-226	
140	" "		.6Ω	A33-226	
141	RF Plate Choke		.6Ω	A33-226	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CLARION PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
60	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	Fil. Bypass Cer.
61	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
62	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
63	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
64	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
65	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
66	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
67	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
68	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
69	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
70	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
71	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
72	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	" " "
73	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	Dial Light Bypass "
74	5000	300	A16-177	1467-005	1W5D5	MW.5-25	1FM-25	RF Bypass "

Note-Some models use 40-40/300V, 40/150V, Part #A18-284 in this application.
* Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	CLARION PART No.	IRC PART No.	CLAROSTAT PART No.	
75A	1 Meg.	½	B24-173	D13-137X	AT-109	Volume Control tapped @ 300KΩ
B	Shaft		Not Req.	E	KSS-3	Attach to 75A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CLARION PART No.	IRC PART No.	
76	1 Meg.	½	A60-668	BTS-1 Meg.	Br.-Blk.-Grn. FM RF Grid
77	68Ω	½	A60-742		Blue-Gray-Blk. FM RF Cathode
78	100Ω	½	A60-743		Br.-Blk.-Br. FM RF Screen
79	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. FM Conv. Grid
80	100Ω	½	A60-743		Br.-Blk.-Br. FM Conv. Screen
81	100Ω	½	A60-743		Br.-Blk.-Br. FM Conv. Plate Decoupling
82	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. FM Osc. Grid
83	68Ω	½	A60-742		Blue-Gray-Blk. FM 1st IF Cathode
84	100Ω	½	A60-743		Br.-Blk.-Br. FM 1st IF Screen
85	100Ω	½	A60-743		Br.-Blk.-Br. FM 1st IF Plate Decoup.
86	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. AVC Network
87	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. " "
88	68Ω	½	A60-742		Blue-Gray-Blk. FM 2nd IF Cathode
89	100Ω	½	A60-743		Br.-Blk.-Br. FM 2nd IF Screen
90	100Ω	½	A60-743		Br.-Blk.-Br. FM 2nd IF Plate Decoup.
91	68Ω	½	A60-742		Blue-Gray-Blk. FM 3rd IF Cathode
92	100Ω	½	A60-743		Br.-Blk.-Br. FM 3rd IF Screen
93	100Ω	½	A60-743		Br.-Blk.-Br. FM 3rd IF Plate Decoup.
94	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. AVC Network
95	270Ω	½	A60-723		Red-Vi.-Br. RF Filter
96	27KΩ	½	A60-745	BTS-27K	Red-Vi.-Or. De-emphasis
97	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. Ratio Det. Diode Load
98	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. AVC Network
99	1 Meg.	½	A60-668	BTS-1 Meg.	Br.-Blk.-Grn. AM Conv. Grid
100	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. AM Osc. Grid
101	68Ω	½	A60-742	BW-½-68	Blue-Gray-Blk. AM IF Cathode
102	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
103	470KΩ	½	A60-731	BTS-470K	Yl.-Vi.-Yl. Diode Load
104	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. Bias
105	33KΩ	½	A60-748	BTS-33K	Or.-Or.-Or. Tone Compensation
106	10 Meg.	½	A60-728	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
107	270KΩ	½	A60-747	BTS-270K	Red-Vi.-Yl. AF Plate Load
108	270KΩ	½	A60-747	BTS-270K	Red-Vi.-Yl. AF Plate Decoup.
109	470KΩ	½	A60-731	BTS-470K	Yl.-Vi.-Yl. Output Grid
110	150Ω	1	A60-741	BW-1-150	Br.-Grn.-Br. Output Cathode
111	27KΩ	2	A60-745	BT-2-27K	Red-Vi.-Or. Bias
112	2000Ω	10	A60-739	AB-2000	Filter

DATE 1/49-#492-5 SET #54-FOLDER #5

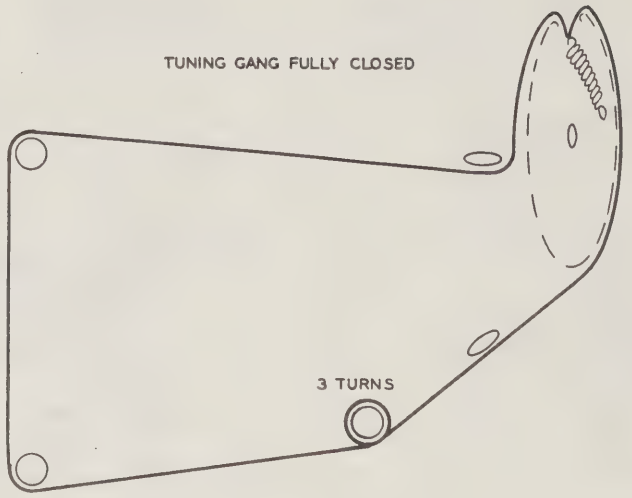
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

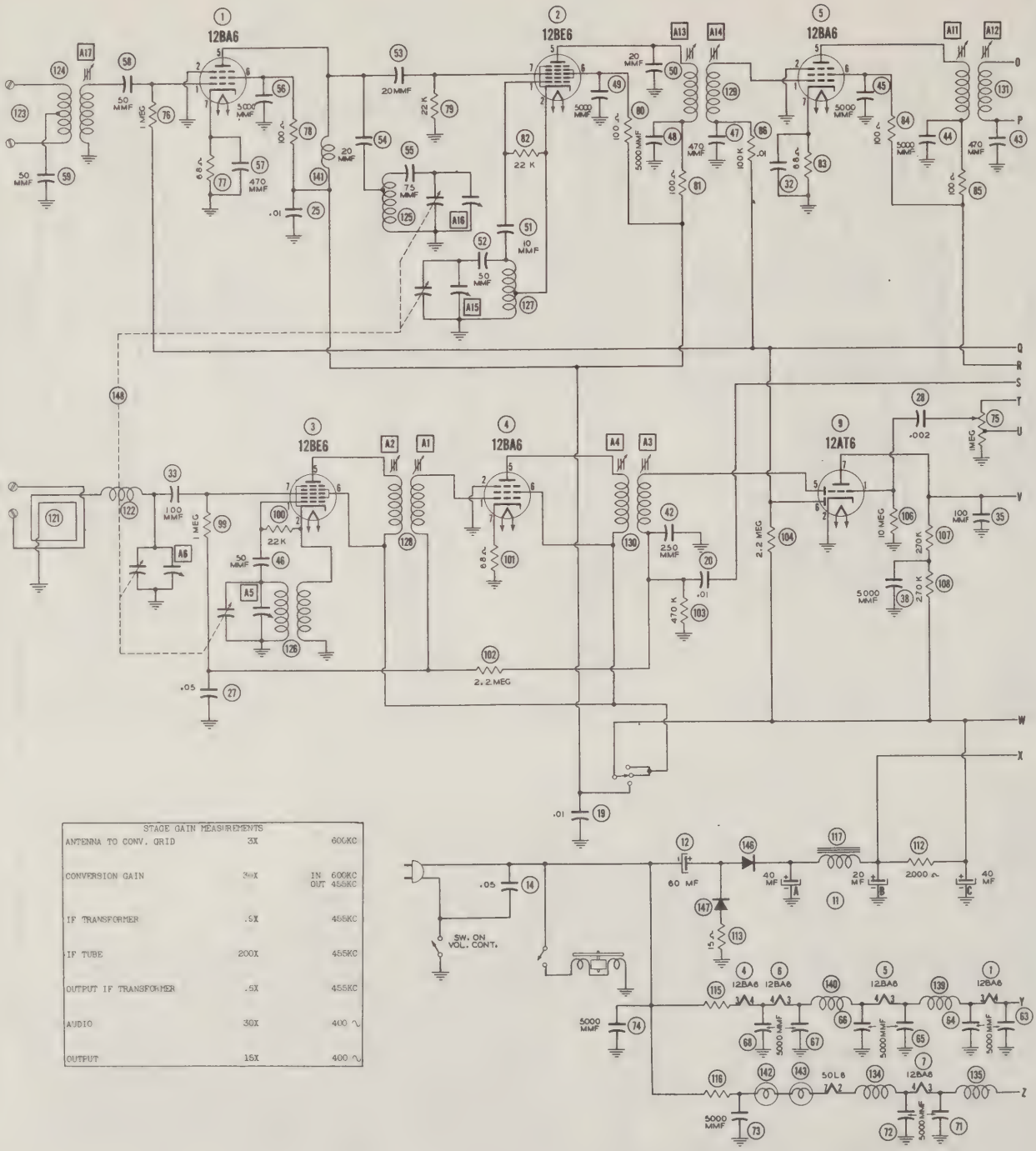
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CLARION PART No.		
142	Bayonet	6-8	0.15	Brown			Type #47
143	"	"	"	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	CLARION PART No.	NOTES
144	Switch	A69-178	Band
145	"	A26-125	Tone
146	Rectifier	A83-463	Selenium (150MA)
147	"	A83-463	" "
148	2 Gang Var. Cap	C19-191	
A5	Trimmer Strip	A20-144	AM Osc. Adj.
A15			FM Osc. Adj.
A16			FM RF Adj.
A6	Trimmer	A20-139	AM Ant. Adj.
	Dial Scale	C67-508	
	Dial Pointer	A58-68	
	Knob	A52-203	Tuning
	"	A52-236	Tone
	"	A52-237	On/Off-Volume
	"	A52-238	Ph.-AM-FM

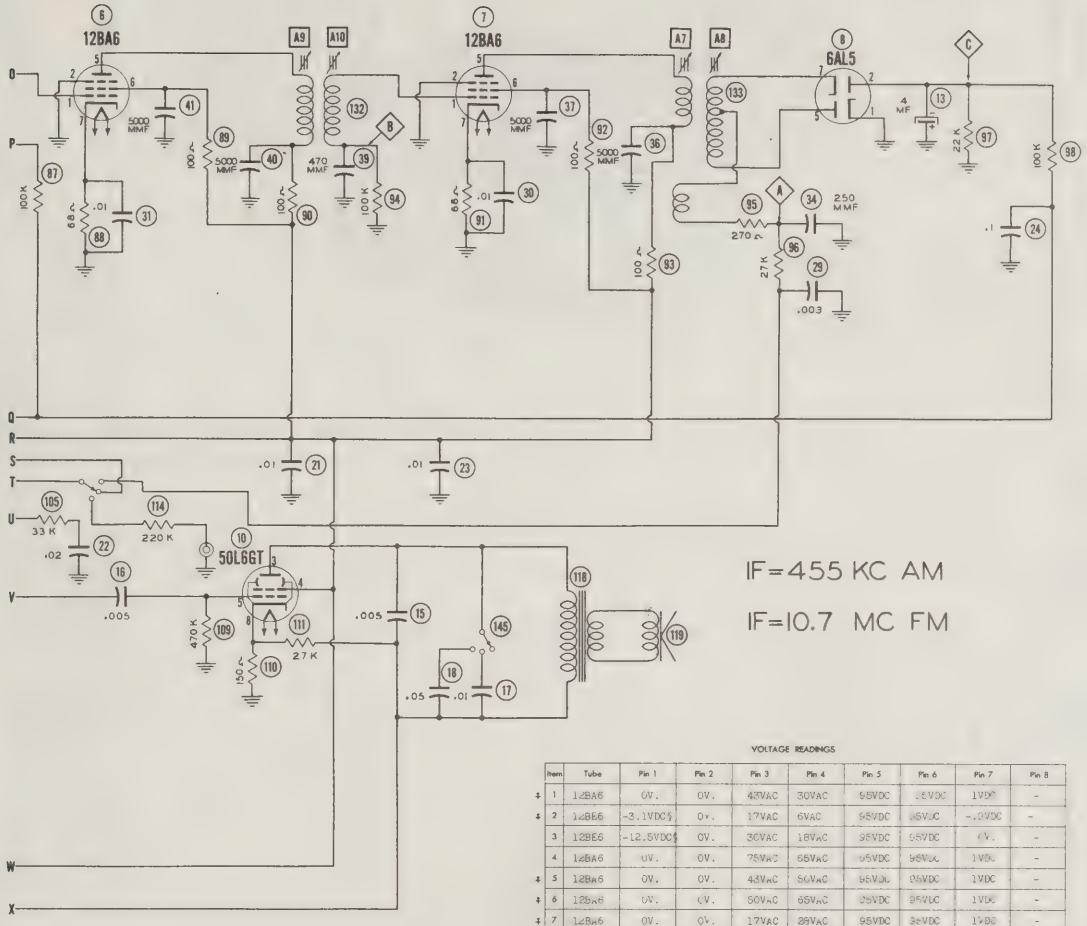


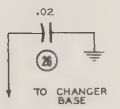
DIAL CORD DRIVE

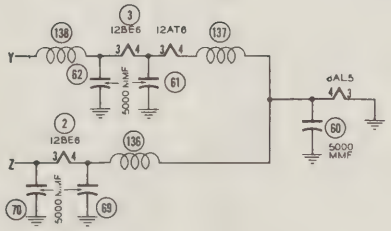


The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

© Howard W. Sams & Co., Inc. 1949







VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	12BA6	0V.	0V.	43VAC	30VAC	95VDC	95VDC	1VDC	-
‡	2	12BE6	-3.1VDC§	0v.	17VAC	6VAC	95VDC	95VDC	-.9VDC	-
	3	12BE6	-12.5VDC§	0V.	30VAC	18VAC	95VDC	95VDC	0V.	-
	4	12BA6	0V.	0V.	75VAC	65VAC	95VDC	95VDC	1VDC	-
‡	5	12BA6	0V.	0V.	43VAC	30VAC	95VDC	95VDC	1VDC	-
‡	6	12BA6	0V.	0V.	50VAC	65VAC	95VDC	95VDC	1VDC	-
‡	7	12BA6	0V.	0V.	17VAC	28VAC	95VDC	95VDC	1VDC	-
‡	8	6AL5	0V.	-1.1VDC	0V.	6VAC	-.5VDC	0V.	-.5VDC	-
	9	12AT6	-.6VDC	0V.	18VAC	6VAC	-.4VDC	0V.	4VDC	-
	10	50L6GT	0V.	28VAC	236VDC	95VDC	0V.	65VDC	70VAC	6.5VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	12BA6	1 Meg.	0Ω	40Ω	28Ω	30KΩ	20KΩ	6Ω	-
‡	2	12BE6	22KΩ	0Ω	17Ω	4Ω	30KΩ	30KΩ	.2KΩ	-
	3	12BE6	22KΩ	.9Ω	28Ω	12Ω	30KΩ	30KΩ	3.7 Meg.	-
	4	12BA6	2.7 Meg.	0Ω	70Ω	60Ω	30KΩ	30KΩ	6Ω	-
‡	5	12BA6	220KΩ	0Ω	40Ω	30Ω	30KΩ	30KΩ	6Ω	-
‡	6	12BA6	2.2MΩ	0Ω	50Ω	60Ω	30KΩ	30KΩ	6Ω	-
‡	7	12BA6	100KΩ	0Ω	17Ω	28Ω	30KΩ	30KΩ	6Ω	-
‡	8	6AL5	0Ω	22KΩ	0Ω	4Ω	1 Meg.	0Ω	1 Meg.	-
	9	12AT6	10 Meg.	0Ω	12Ω	4Ω	470KΩ	130KΩ	570KΩ	-
	10	50L6GT	INF.	2Ω	30KΩ	30KΩ	470KΩ	2.2MΩ	70Ω	150Ω

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1949

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with side of signal generator and chassis.

Use insulated alignment screwdriver for all adjustments

AM ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 7 (grid) of 12BE6 AM Conv. Tube (7). Low side to chassis.	455KC	BC (Clockwise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	250MMFD	"	1600KC	"	"	"	A5	Adjust for maximum output
3	250MMFD	High side to either dipole terminal. Low side to chassis.	1400KC	"	Tune for maximum output.	"	A6	" " " "

FM ALIGNMENT USING FM SIGNAL GENERATOR OSCILLOSCOPE & OUTPUT METER

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep with exception of RF alignment Steps 7, 8 & 9 where 400 ∿ modulation with 45KC sweep is used. Connect the synchronized sweep voltage from the sig. gen. to the horizontal input of scope. The horizontal sweep voltage may be taken from the power line if the sig. gen. does not have a sync. voltage output. There may be some phase shift encountered between sig. gen. and scope horizontal sweep. If provision is made for this in the scope rotate phase control until the two curves coincide. If no provision is made for this the same thing may be accomplished by inserting a cap. of suitable value (.01 to .1 MFD) in series with the horizontal sync. input.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4	.1 MFD.	High side to Pin 1 (grid) of 12BA6 2nd FM IF Tube (4). Low side to chassis.	10.7MC (Freq. Mod.)	FM (Counter-Clockwise)	Tuning cap. fully open.	Vertical input to Point (A). Ground to chassis.	A7,A8	Alternately adjust A7 for maximum amplitude and A8 for maximum linearity of "S" curve with curve centered on horizontal scope sweep line per Fig. 1.
5	.1 MFD.	High side to Pin 1 (grid) of 12BA6 FM RF Tube (1). Low side to chassis.	"	"	"	Vertical input to Point (B). Ground to chassis.	A9,A10 A11,A12	Connect short from junction of cap. (24) and resistor (98) to chassis. Adjust for maximum amplitude and symmetry of pattern per Fig. 2 with pattern centered on horizontal scope sweep line.
6	.1 MFD.	High side to Pin 5 (plate) of 12BA6 FM RF Tube (1). Low side to chassis.	"	"	"	"	A13, A14	Adjust for maximum amplitude and symmetry of pattern per Fig. 3 with pattern centered on horizontal scope sweep line. Remove short from junction of resistor (98) and cap. (24) to chassis.
						OUTPUT METER		
7	2 -150Ω carbon res.	Each side in series with 150Ω resistor across dipole ant. terminals.	108MC (Freq. Modulated 400 ∿ mod. 45KC sweep)	FM	Tuning cap. fully open.	Across voice coil	A15	Adjust for maximum output
8	"	"	103MC	"	Tune for maximum output.	"	A16	" " " "
9	"	"	100MC	"	"	"	A17	" " " "

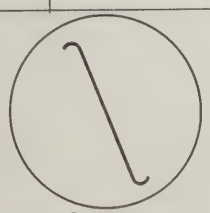


FIG. 1

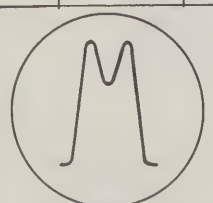


FIG. 2

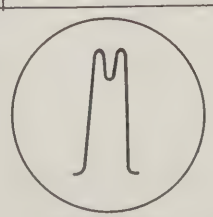


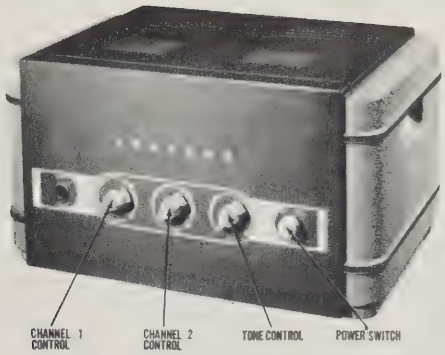
FIG. 3

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

For plotting discriminator curve, vary sig. gen. 100KC above and below 10.7MC in Steps of 20KC. Record readings of VTVM for each setting of sig. gen. and plot curve. If curve is not similar to Fig. 1 repeat adjustment of A7 and A8 and replot curve.

For plotting IF curve, vary sig. gen. 150KC above and below 10.7MC in Steps of 20KC. Record readings of VTVM for each setting of sig. gen. and plot curve. If curve is not similar to Fig. 2 or Fig. 3 repeat last adjustments and replot curve.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	.1 MFD.	High side to Pin 1 (grid) of 12BA6 3rd FM IF Tube (5). Low side to chassis.	10.7MC (Unmodulated)	FM	Tuning cap. fully open.	DC probe to Point (C). Common to chassis	A7	Adjust for maximum deflection.
5	.1 MFD.	"	"	"	"	DC probe to Point (A). Common to chassis	A8	Adjust for zero deflection. Plot discriminator curve per prealignment instructions. Once curve is satisfactory do not disturb adjustment of A7 or A8.
6	.1 MFD.	High side to Pin 1 (grid) of 12BA6 2nd FM IF Tube (4). Low side to chassis.	"	"	"	DC probe to Point (B). Common to chassis	A9,A10	Solder a shunt cap. of 100 MMFD across secondary of 3rd FM IF Transformer (132) and adjust A9 for maximum deflection. Transfer shunting cap. to primary of the same transformer and adjust A10 for maximum deflection. Plot IF curve per prealignment instructions Once curve is satisfactory do not disturb adjustment of A9 or A10. Remove shunt cap.
7	.1 MFD.	High side to Pin 1 (grid) of 12BA6 1st FM IF Tube (3). Low side to chassis.	"	"	"	"	A11, A12	Solder a shunt cap. of 100 MMFD across secondary of 2nd FM IF Transformer (131) and adjust A11 for maximum deflection. Transfer shunting cap. to primary of the same transformer and adjust A12 for maximum deflection. Plot IF curve per prealignment instructions. Once curve is satisfactory do not disturb adjustment of A11 or A12. Remove shunt cap.
8	.1 MFD.	High side to Pin 5 (plate) of 12BA6 FM RF Tube (1). Low side to chassis.	"	"	"	"	A13, A14	Solder a shunt cap. of 100 MMFD across secondary of 1st FM IF Transformer (129) and adjust A13 for maximum deflection. Transfer shunting cap. to primary of the same transformer and adjust A14 for maximum deflection. Plot IF curve per prealignment instruction. Once curve is satisfactory do not disturb adjustment of A13 and A14. Remove shunt cap.
9	2 -150Ω carbon res.	Each side in series with 150Ω resistor across dipole ant. terminals.	108MC (Unmodulated)	FM	Tuning cap. fully open.	DC probe to Point (B). Common to chassis	A15	Adjust for maximum deflection.
10	"	"	103MC	"	Tune for maximum deflection.	"	A16	Rock tuning cap. and adjust for maximum deflection.
11	"	"	100MC	"	"	"	A17	Adjust for maximum deflection.



CONCORD MODEL 2-106

TRADE NAME	Concord, Model 2-106
SUPPLIER	Concord Radio Corp., 901-11 W. Jackson Blvd., Chicago, Ill.
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES (TEN)	Types,, 6SQ7 Mic. 1 Amp., 6SQ7 Mic. 2 Amp., 6SQ7 Mixer, 7N7 AF-Phase Inv., (4) 6V6GT Power Output, (2) 7Z4 Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .88 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SQ7	0V.	0V.	.6VDC	.6VDC	.6VDC	39VDC	3.1VAC	3.1VAC
2	6SQ7	0V.	0V.	.6VDC	.6VDC	.6VDC	45VDC	3.1VAC	3.1VAC
3	6SQ7	0V.	0V.	.9VDC	.9VDC	.9VDC	90VDC	3.1VAC	3.1VAC
4	7N7	3.1VAC	4.9VDC	115VDC	0V.	0V.	115VDC	4.9VDC	3.1VAC
5	6V6GT	0V.	3.1VAC	400VDC	300VDC	0V.	0V.	3.1VAC	20VDC
6	6V6GT	0V.	3.1VAC	400VDC	300VDC	0V.	0V.	3.1VAC	20VDC
7	6V6GT	0V.	3.1VAC	400VDC	300VDC	0V.	0V.	3.1VAC	20VDC
8	6V6GT	0V.	3.1VAC	400VDC	300VDC	0V.	-5.9VDC	3.1VAC	20VDC
9	7Z4	405VDC	0V.	370VAC	0V.	0V.	370VAC	390VDC	405VDC
10	7Z4	405VDC	0V.	370VAC	0V.	0V.	370VAC	390VDC	405VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SQ7	0Ω	1 Meg.	2.2KΩ	2.2KΩ	2.2KΩ	400KΩ	.05Ω	.05Ω
2	6SQ7	0Ω	1 Meg.	2.2KΩ	2.2KΩ	2.2KΩ	400KΩ	.05Ω	.05Ω
3	6SQ7	0Ω	400KΩ	3.3KΩ	3.3KΩ	3.3KΩ	270KΩ	.05Ω	.05Ω
4	7N7	.05Ω	2.2KΩ	140KΩ	3.3KΩ	1.1 Meg.	140KΩ	2.2KΩ	.05Ω
5	6V6GT	INF.	.05Ω	40KΩ	50KΩ	42KΩ	INF.	.05Ω	170Ω
6	6V6GT	INF.	.05Ω	40KΩ	50KΩ	42KΩ	INF.	.05Ω	170Ω
7	6V6GT	INF.	.05Ω	40KΩ	50KΩ	50KΩ	INF.	.05Ω	170Ω
8	6V6GT	INF.	.05Ω	40KΩ	50KΩ	50KΩ	47Ω	.05Ω	170Ω
9	7Z4	40KΩ	INF.	135Ω	INF.	INF.	135Ω	40KΩ	40KΩ
10	7Z4	40KΩ	INF.	130Ω	INF.	INF.	130Ω	40KΩ	40KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output lead connected.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-6 SET #54-FOLDER #6

CONCORD
MODEL 2-106

CONCORD
MODEL 2-106

PARTS LIST AND DESCRIPTIONS

CONCORD MODEL 2-106

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CONCORD PART No.	STANDARD REPLACEMENT		
1	Mic. 1 Amp.	6SQ7	6SQ7	8Q	
2	Mic. 2 Amp.	6SQ7	6SQ7	8Q	
3	Mixer	6SQ7	6SQ7	8Q	
4	AF & Phase Inv.	7N7	7N7	8AC	
5	Power Output	6V6GT	6V6GT	7AC	
6	" "	6V6GT	6V6GT	7AC	
7	" "	6V6GT	6V6GT	7AC	
8	" "	6V6GT	6V6GT	7AC	
9	Rectifier	7Z4	7Z4	5AB	
10	"	7Z4	7Z4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CONCORD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
11	40	450		AF8J	UP4045	DY-40-450	EL-4	Filter
12A	10	450		AF22J	UP1145	DY-2x10-450	EL-210	■ Decoupling
B	10	450						▲ "
13	40	150		PRS150/40	BR4015	M-40-150	UT-401	Output Cathode Bypass
14	16	450		PRS450/16	BR1645	M-16-450	UT-16	Filter
15A	20	150		PRSA150/20-20	EDL2215	DSB-2x20-150	TA-220	Cathode Bypass
B	20	150						" "
16	25	25		PRS25/25	BR252A	M-25-25	TA-25	AF Cath. Bypass
17	.002	1600		1684-002	MD16D2	STM-16-002	TR-22	Output Plate Byp.
18	.1	600		684-.1	DT6P1	ST-6-1	TC-1	Audio Coupling
19	.1	600		684-.1	DT6P1	ST-6-1	TC-1	" "
20	.05	400		484-05	DT4S5	ST-4-05	TC-15	" "
21	.05	400		484-05	DT4S5	ST-4-05	TC-15	" "
22	.05	400		484-05	DT4S5	ST-4-05	TC-15	" "
23	.002	600		684-002	DT6D2	ST-6-002	TC-22	Tone Compensation
24	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	AF Grid Bypass
25	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	Tone Compensation

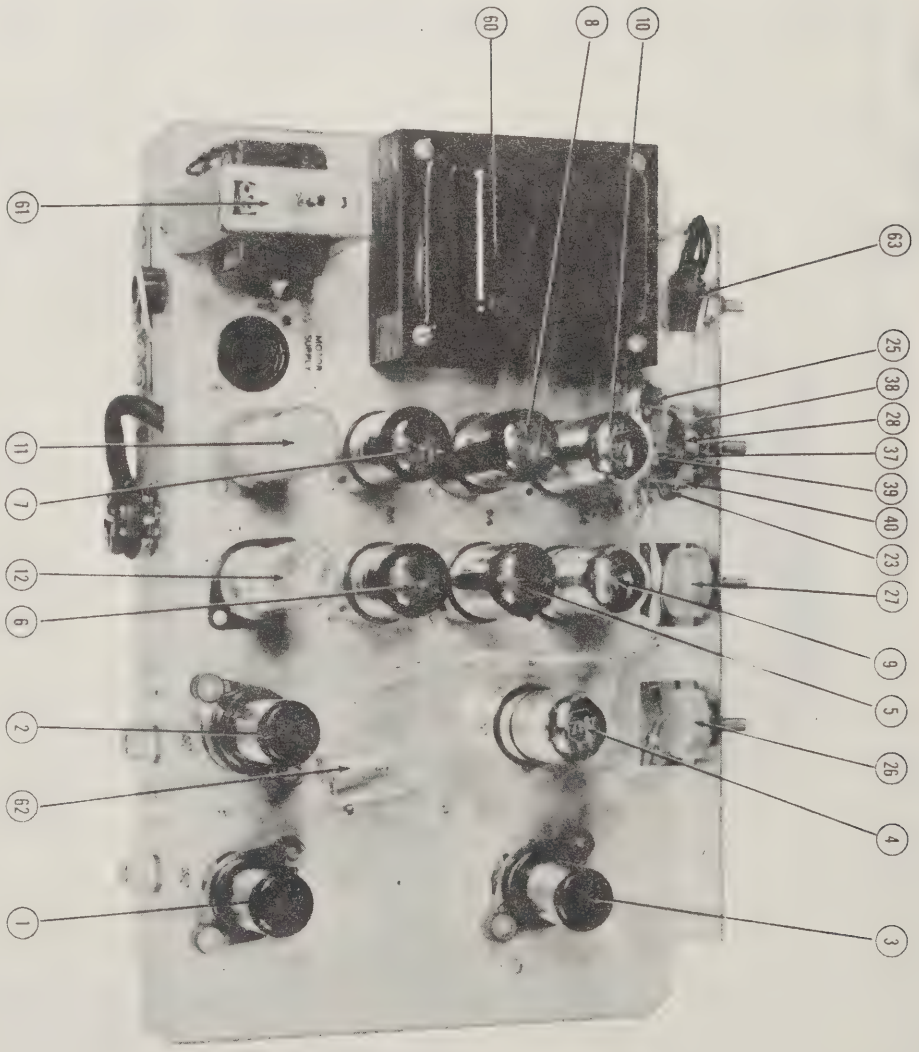
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	CONCORD PART No.	IRC PART No.	CLAROSTAT PART No.	
26A	500KΩ	½		D13-133	M-60-Z	Channel 1 Control
B	Shaft			A	Not Req.	Attach to 26A per instructions
27A	500KΩ	½		D13-133	M-60-Z	Channel 2 Control
B	Shaft			A	Not Req.	Attach to 27A per instructions
28	4 Meg.	½				Tone Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CONCORD PART No.	IRC PART No.	
29	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. 1st Mic. Amp. Grid
30	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. 2nd Mic. Amp. Grid
31	2000Ω	½		BTS-2200	Red-Blk.-Red 1st Mic. Amp. Cathode
32	2000Ω	½		BTS-2200	Red-Blk.-Red 2nd Mic. Amp. Cathode
33	270KΩ	½		BTS-270K	Red-Vi.-Yl. 1st Mic. Amp. Plate Load
34	270KΩ	½		BTS-270K	Red-Vi.-Yl. 2nd Mic. Amp. Plate Load
35	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Isolation
36	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. "
37	180KΩ	½		BTS-180K	Br.-Gray-Yl. Tone Compensation
38	150KΩ	½		BTS-150K	Br.-Grn.-Yl. " "
39	330KΩ	½		BTS-330K	Or.-Or.-Yl. " "
40	560KΩ	½		BTS-560K	Grn.-Blue-Yl. " " -See Note 1
41	3300Ω	½		BTS-3300	Or.-Or.-Red Mixer Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CONCORD PART No.	IRC PART No.	
42	270KΩ	½		BTS-270K	Red-Vi.-Yl. Mixer Plate Load
43	150KΩ	½		BTS-150K	Br.-Grn.-Yl. " " " -See Note 2
44	51KΩ	1		BTA-47K	Grn.-Br.-Or. Decoupling
45	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. AF Grid
46	270KΩ	½		BTS-270K	Red-Vi.-Yl. Tone Compensation
47	50KΩ	½		BTS-47K	Grn.-Blk.-Or. AF Plate Load
48	2000Ω	½		BTS-2200	Red-Blk.-Red AF Cathode
49	3300Ω	½		BTS-3300	Or.-Or.-Red Phase Inverter Grid
50	50KΩ	½		BTS-47K	Grn.-Blk.-Or. Phase Inverter Plate Load
51	39KΩ	½		BTS-39K	Or.-White-Or. Output Grid
52	50KΩ	½		BTS-47K	Grn.-Blk.-Or. " "
53	171Ω	5		ABA-200	Output Cathode-See Note 3
54	10KΩ	10		AB-10K	Output Cathode Bias-See Note 4
55	7500Ω	10		AB-7500	Filter
56	47KΩ	2		BT-2-47K	Yl.-Vi.-Or. Decoupling
57	47Ω	5		AB-50	Voltage Dropping
58	680Ω	1		BTA-680	Blue-Gray-Br. Parasitic Suppressor-See Note 2
59	680Ω	1		BTA-680	Blue-Gray-Br. " " " " "

Note 1-Some models use 470KΩ in this application. IRC replacement BTS-470K.
Note 2-Not used in all models.
Note 3-On IRC replacement set slider at 470Ω from one end.
Note 4-Some models use 50KΩ, 5 watt in this application. IRC replacement DG-50K.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CONCORD PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
60	117V AC @ .88A tapped @ 110VAC	740V CT @.12ADC	6.0V AC @ 1.8A	6.2V CT @ 3.5A		P-6165		

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CONCORD PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
61	7250Ω CT	4Ω 8Ω 16Ω	156Ω CT	.2Ω .3Ω 4.8Ω			T-22858#	A-3027#	#Bend one mounting tab down and fasten to side of chassis.

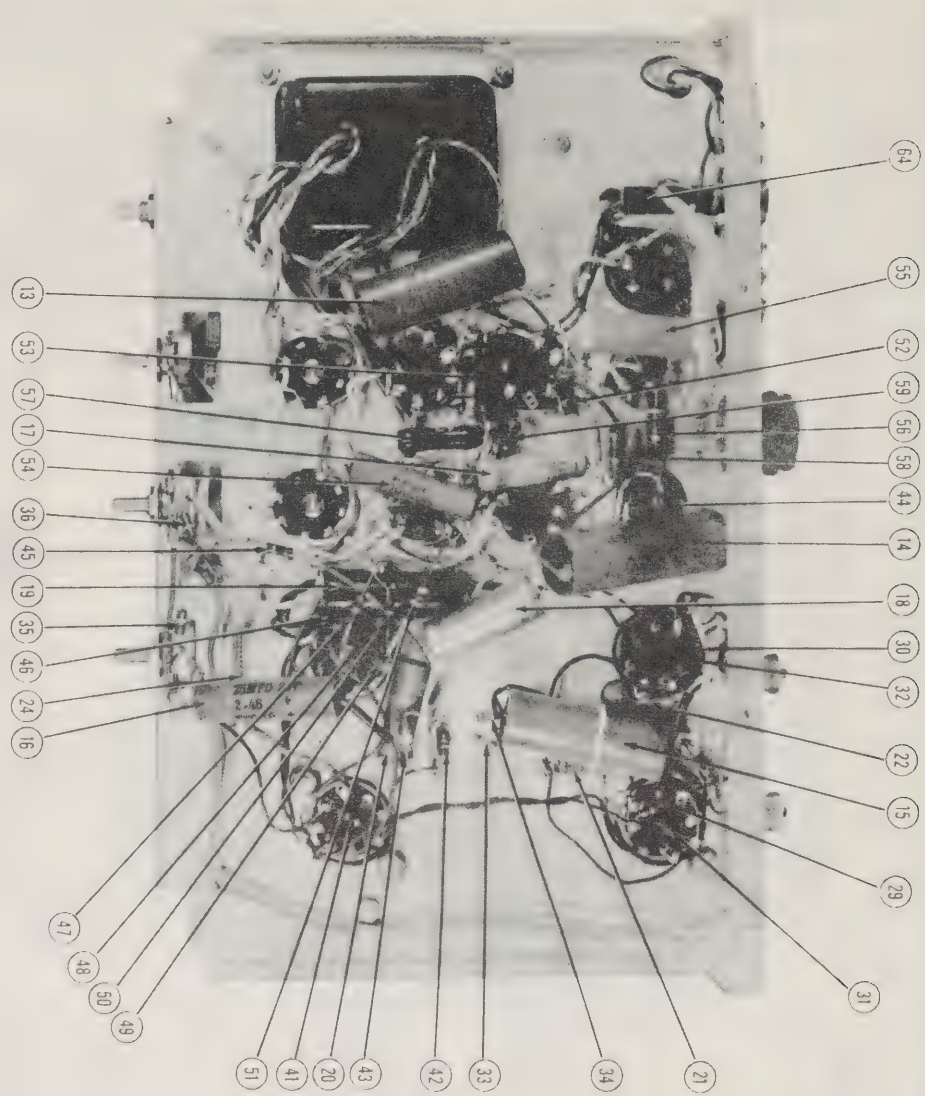
DIAL LIGHT

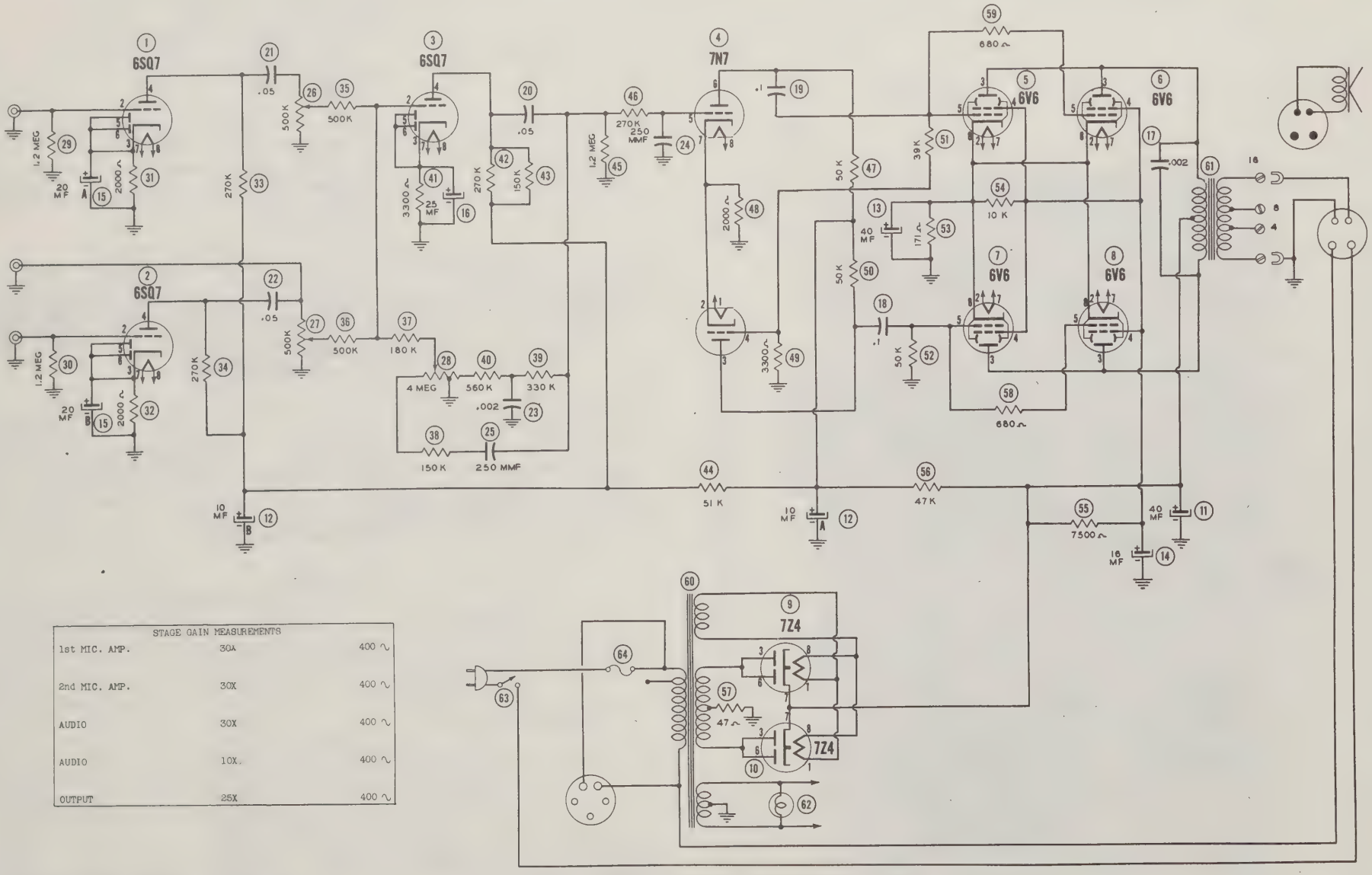
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CONCORD PART No.		
62	Bayonet	7.5	0.2	White			Type #51

MISCELLANEOUS

ITEM No.	PART NAME	CONCORD PART No.	NOTES
63	Switch		On-Off
64	Fuse		2 Amp.

CHASSIS—BOTTOM VIEW





STAGE GAIN MEASUREMENTS		
1st MIC. AMP.	30A	400 ∿
2nd MIC. AMP.	30X	400 ∿
AUDIO	30X	400 ∿
AUDIO	10X	400 ∿
OUTPUT	25X	400 ∿

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1949

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

CROSLEY MODELS
9-121, 9-122W

CROSLEY MODELS
9-121, 9-122W

CROSLEY MODEL 9-121

TRADE NAME	Crosley, Models 9-121, 9-122W
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 or 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600 KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cap. fully closed and set pointer 1-3/16" from left edge of dial backplate. This is the reference mark referred to below.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator section of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to r educe hum modulation.
2		Loop	1600KC	4-7/8" from reference mark.	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A4	Adjust for maximum output. Note trimmer opposite A3 is a factory adjustment and ordinarily need not be adjusted.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-8 SET #54-FOLDER #8

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CROSLEY PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4A	Power Output	50B5	50B5	7BZ	
B	" "	50C5	50C5		
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CROSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
6A	50	150	B-136770	PRSA150/30-50	EDL5315	DSB-5030-150	TA-530	Filter-Red
B	30	150						" -Blue
7	.05	200	39001-17	484-05	GT2S5	ST-4-05	TC-15	Line Filter
8	.08	200	39001-19	484-.1	GT2P1	ST-2-1	72P2	Line Isolation
9	.02	200	39001-80	484-02	GT2S2	ST-4-02	TC-12	Output Plate Bypass
10	.00025	600	39001-73	1468-00025	GT6T25	ST-6-00025	TC-325	IF Coupling
11	.05	200	39001-17	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
12	.01	200	39001-13	484-01	GT2S1	ST-4-01	TC-11	Bias Filter
13A	5000	300	*	484-005	GT6D5	ST-6-005	TC-25	Audio Coupling-Cer.
B	220	300	*	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
C	2000	300	*	484-002	GT6D2	ST-6-002	TC-22	Audio Coupling
D	220	300	*	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter
14	50	300	C-137727-21	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.-Cer.

*Items 13A,B,C,D. are combined into one unit obtainable under manufacturers part number B144675-1.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	1 Meg.	½	39368-14	D13-137	AM-63-Z	Volume Control
B	Shaft	Not Req.	E	KSS-3	Attach to 15A per instructions	
C	Switch		39369-1	41	SW-A	" " " " "

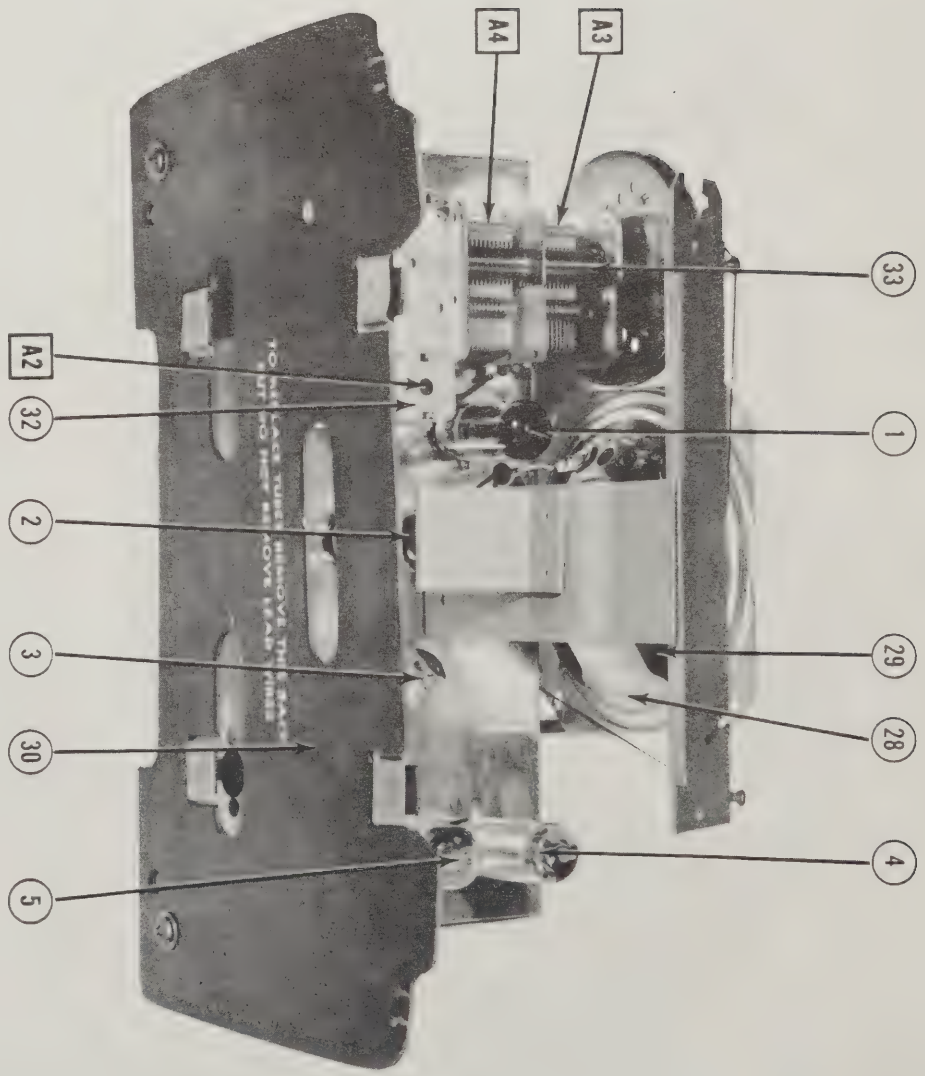
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.	
16	22KΩ	½	39373-60	BTS-22K	Red-Red-Or. Osc. Grid
17	100Ω	½	39373-14	BW-½-100	Br.-Blk.-Br. Conv. Cathode
18	3.3 Meg.	½	39373-100	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	47KΩ	½	39373-67	BTS-47K	Yl.-Vi.-Or. Diode Filter
20	10 Meg.	½	39373-107	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
21	220KΩ	½	39373-80	BTS-220K	Red-Red-Yl. AF Plate Load
22	470KΩ	½	39373-87	BTS-470K	Yl.-Vi.-Yl. Output Grid
23	150Ω	½	39373-16	BW-½-150	Br.-Grn.-Br. Output Cathode
24	1200Ω	1	39373-144	BTA-1200	Br.-Red-Red Filter
25	47Ω	1	39373-119	BW-1-47	Yl.-Vi.-Blk. Surge Limiter
26	6800Ω	1	39373-161	BTA-6800	Blue-Gray-Red IF Plate Load

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
27	2100Ω	3.7Ω	230Ω	1Ω	138131-1	A-3876	T22845	A-2928	Original Part #B-137723.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

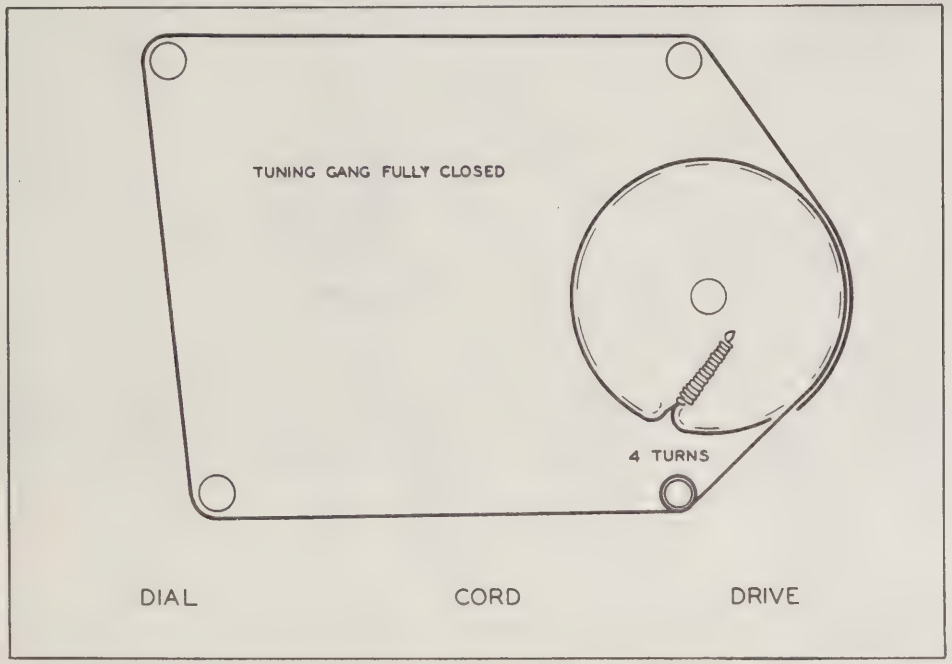
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-113†		†Original Part #AD-138459.
28	PM	3.7Ω	139631	Mod. P4-X	4A07†	Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
29	4"	9/16"				

R F COILS

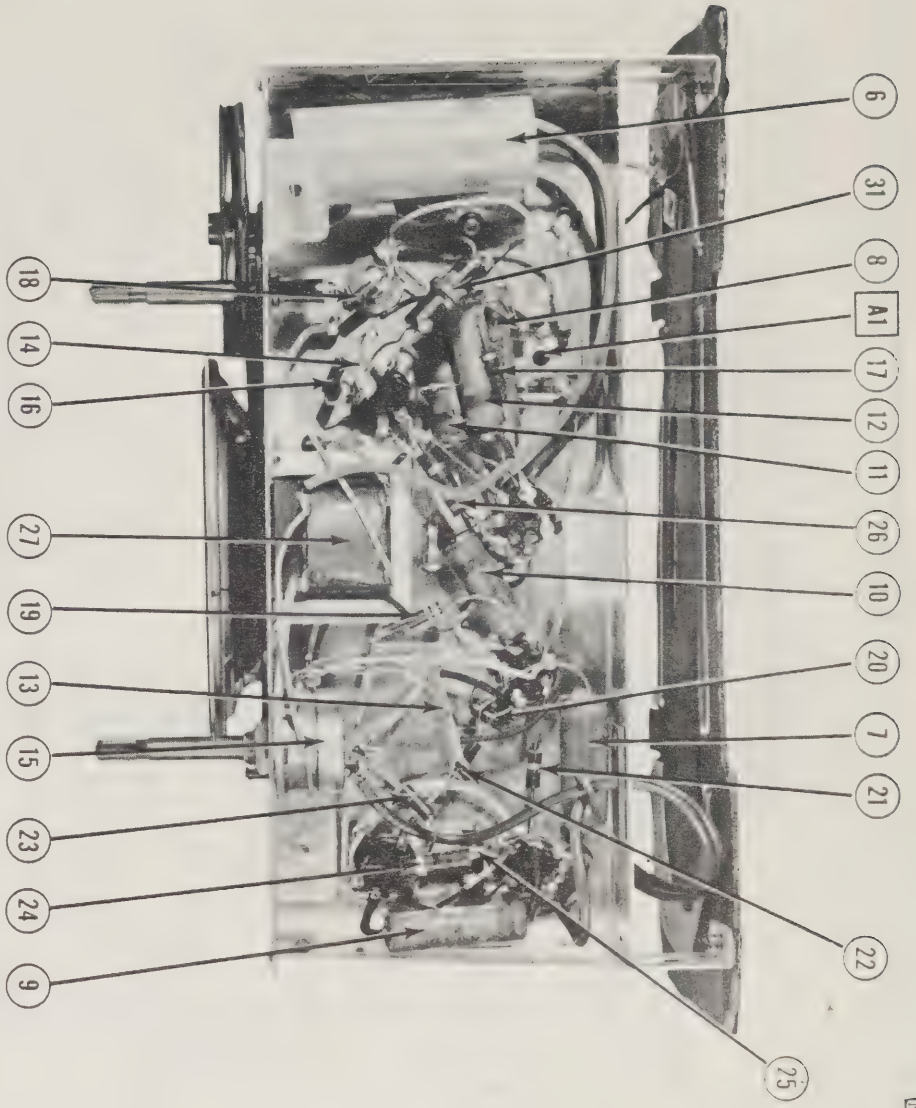
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.
30	Loop Ant.		3Ω	AC-144328	
31	Osc. Coil	.9Ω	9Ω	AW-144325	14-1060
32	IF Trans.	22Ω	21.5Ω	C-139919	16-6678

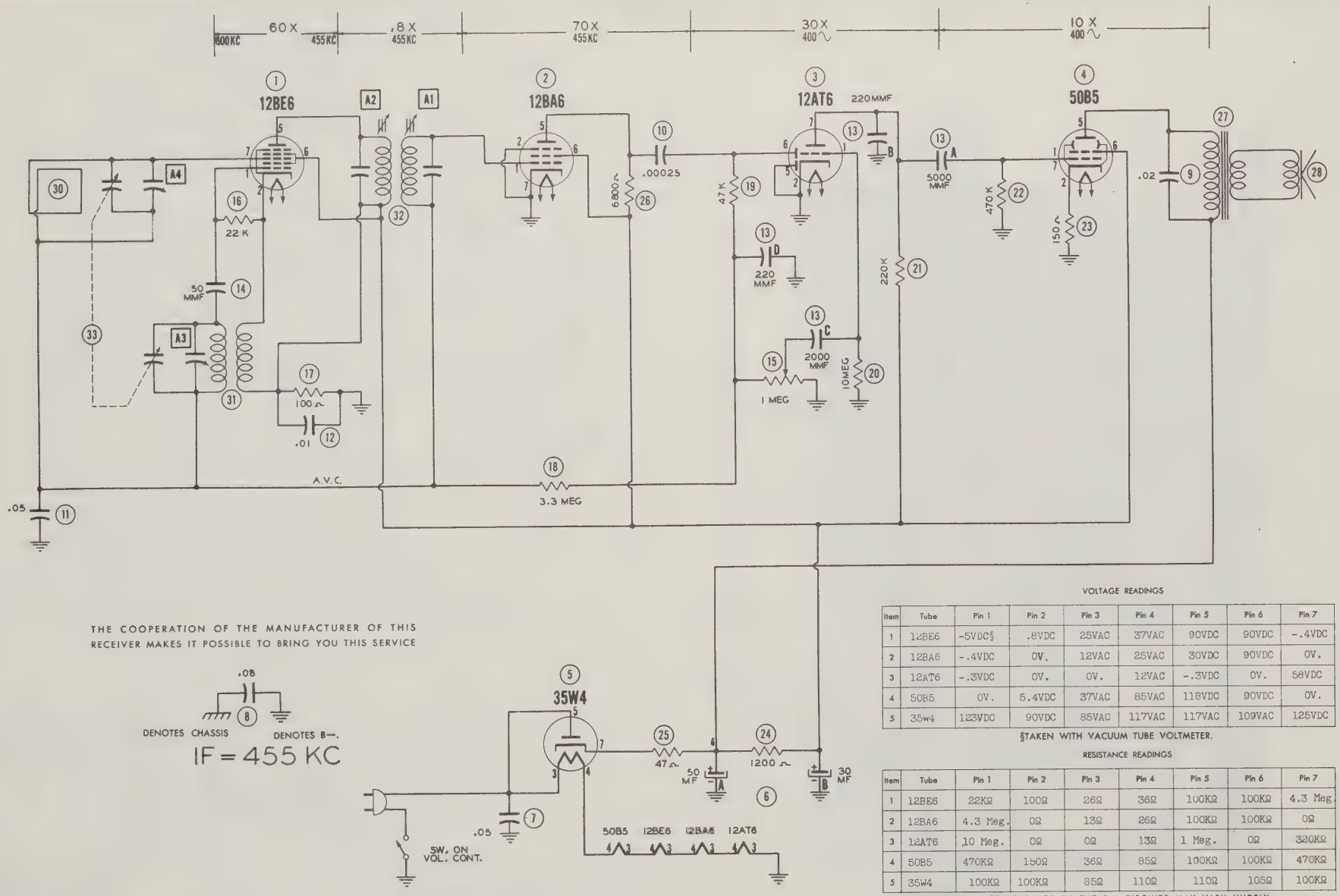
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
33	2 Gang Var. Cap.	AC-137073-15	(25-462MMF, 32-197MMF)
	Cabinet	R-144015-2	Model 9-121
	"	AW-143988	Model 9-122W
	Dial Glass	C-144175	
	Knob	B-138540-1	Model 9-121
	"	B-138540-2	Model 9-122W
	Dial Pointer	B-144162	



CHASSIS—BOTTOM VIEW





THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-5VDC§	.8VDC	25VAC	37VAC	90VDC	90VDC	-.4VDC
2	12BA6	-.4VDC	0V.	12VAC	25VAC	30VDC	90VDC	0V.
3	12AT6	-.3VDC	0V.	0V.	12VAC	-.3VDC	0V.	58VDC
4	50B5	0V.	5.4VDC	37VAC	85VAC	118VDC	90VDC	0V.
5	35w4	123VDC	90VDC	85VAC	117VAC	117VAC	109VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	22KΩ	100Ω	26Ω	36Ω	100KΩ	100KΩ	4.3 Meg.
2	12BA6	4.3 Meg.	0Ω	13Ω	26Ω	100KΩ	100KΩ	0Ω
3	12AT6	10 Meg.	0Ω	0Ω	13Ω	1 Meg.	0Ω	320KΩ
4	50B5	470KΩ	150Ω	36Ω	85Ω	100KΩ	100KΩ	470KΩ
5	35W4	100KΩ	100KΩ	85Ω	110Ω	110Ω	105Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

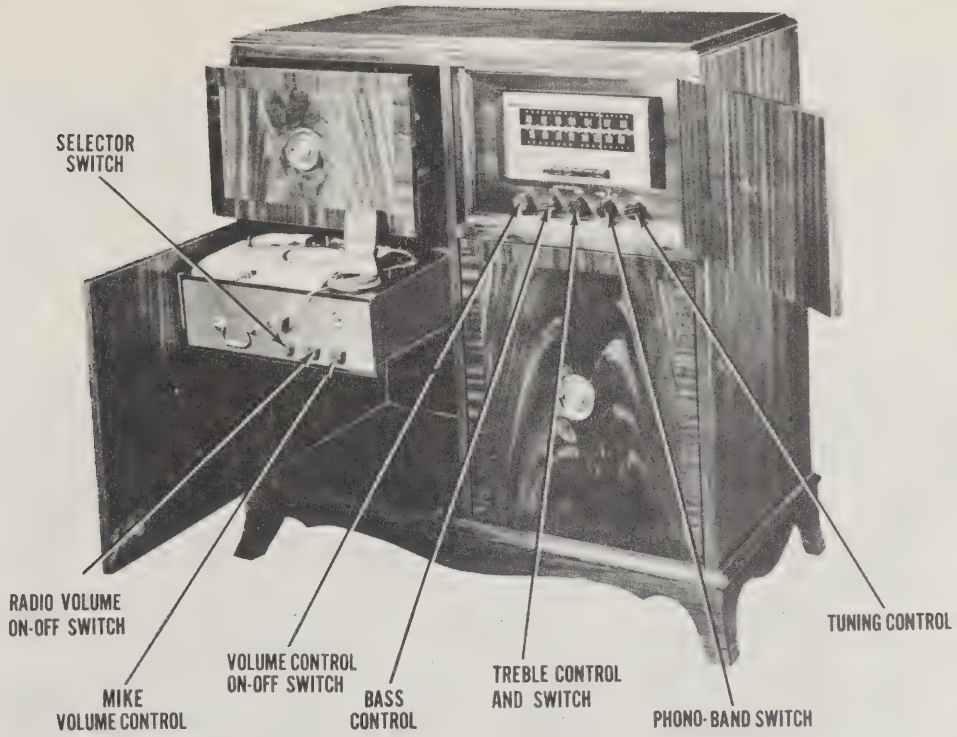
A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1949

492-8

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



HOFFMAN MODEL C1007

TRADE NAME	Hoffman, Models C1006, C1007
MANUFACTURER	Hoffman Radio Corp., 3761 S. Hill St., Los Angeles, Calif.
TYPE SET	AC Operated Combination Phono-Radio-Wire Recorder, AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (TWENTY-THREE)	Types, 6BA6 RF Amp., 6BE6 Mixer, 6C4 Oscillator, 6BA6 1st IF Amp., 6BA6 2nd IF Amp., 6AL5 Ratio Det., 6AT6 AM Det.-AVC-AF, 6SJ7 AF Amp., 6J5GT Tone Amp., 6SJ7 Mic. Amp., 6SL7GT Rec. 1st AF-Aux. Amp., 6SL7GT Rec. 2nd AF-Vol. Ind. Amp., 6U5/6G5 Volume Ind., 6K6GT Power Output, 6V6GT Bias Osc., 6X5GT Rectifier, 6J5 AF Amp., 6J5GT Phase Inv., (4) 6K6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING 2.1 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1650KC — FREQ. MOD. 88-108MC

DISASSEMBLY INSTRUCTIONS

1. Remove five push-on type control knobs from the tuning chassis.
2. Remove phono-pickup plug from tuning chassis.
3. Remove recorder amplifier audio plug from rear of tuning chassis.
4. Remove loop leads from terminal strip on loop antenna.
5. Remove audio plug from power supply chassis.
6. Remove FM antenna leads from terminal strip on rear of tuning chassis.
7. Remove power plug from power supply chassis.
8. Remove cabinet light plug from rear of tuning chassis.
9. Remove loop antenna ground lead from rear of tuning chassis.
10. Remove four machine screws holding tuning chassis in cabinet. Remove chassis from cabinet.
11. Remove speaker plug from power supply chassis.
12. Remove recording amplifier power plug from power supply chassis.
13. Remove phono-motor plug from power supply chassis.
14. Remove four machine screws holding power supply chassis in cabinet. Remove chassis from cabinet.
15. Remove two wood screws holding loop antenna in cabinet. Remove loop from cabinet.
16. Remove eight machine screws holding speaker in cabinet. Remove speaker from cabinet.
17. Remove three push-on type control knobs and one lock nut holding microphone jack, from recording amplifier chassis.
18. Remove the two drawer stops from the runners at the back of wire recorder drawer. Pull the drawer out front of cabinet.
19. Remove four wood screws holding panel over bottom of wire recorder drawer.
20. Remove three control shaft extensions from recorder amp. chassis.
21. Remove tuning eye from bracket.
22. Remove recorder motor plug from chassis.
23. Remove record play back plug from chassis.
24. Remove lamp-speaker plug from chassis.
25. Remove two machine screws holding recorder amp. chassis in drawer. Remove chassis from drawer.

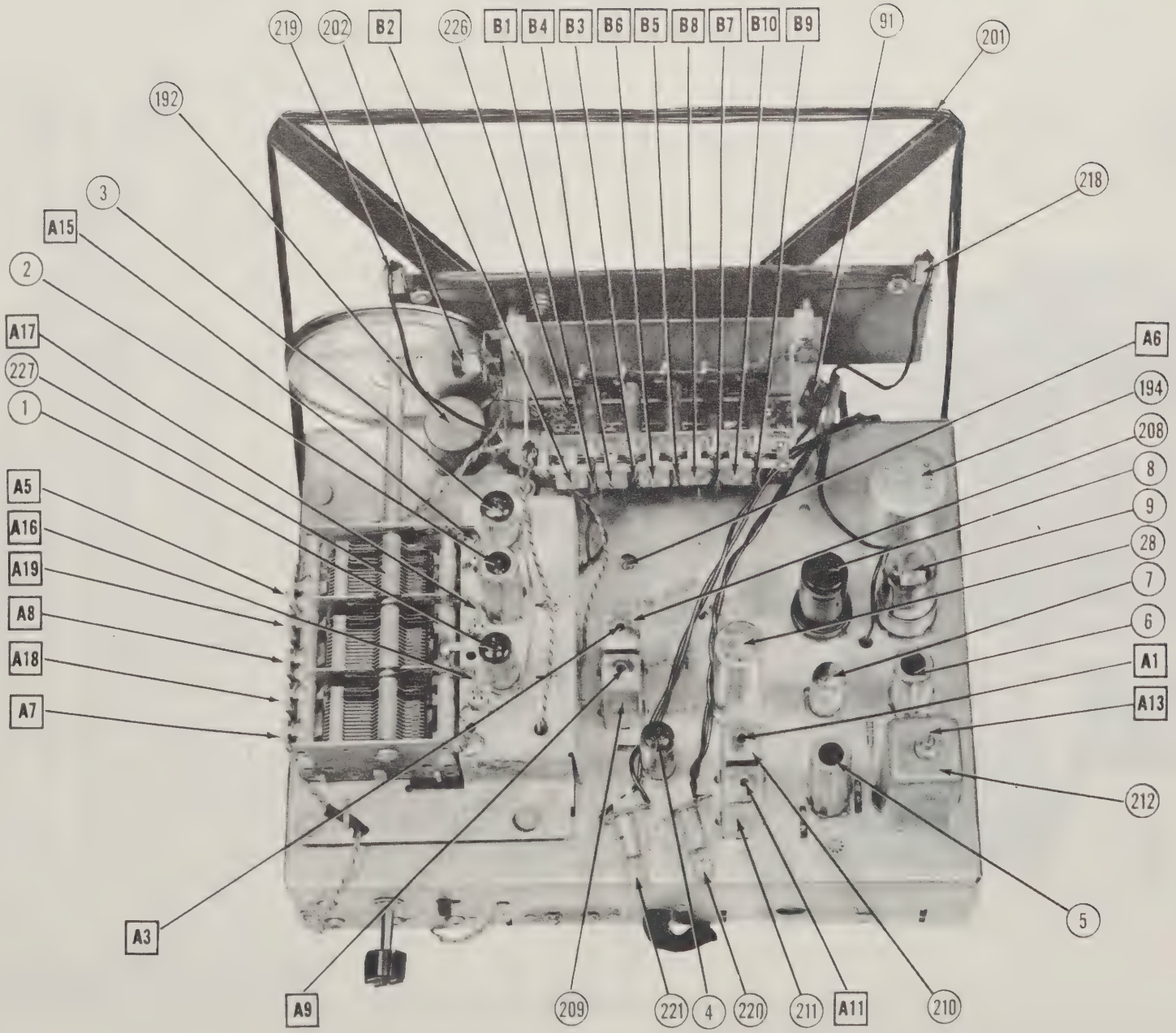
HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

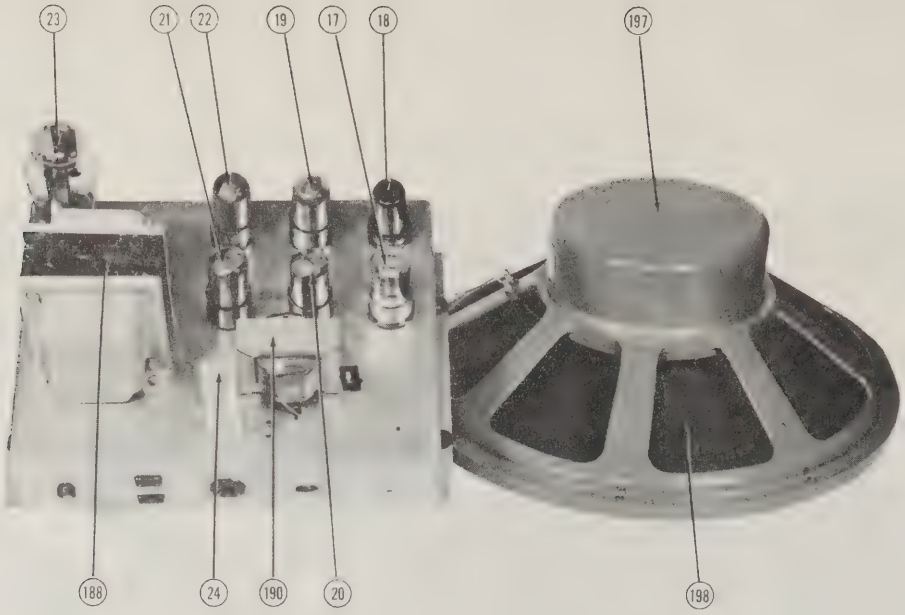
DATE 1/49-#492-9 SET #54-FOLDER #9

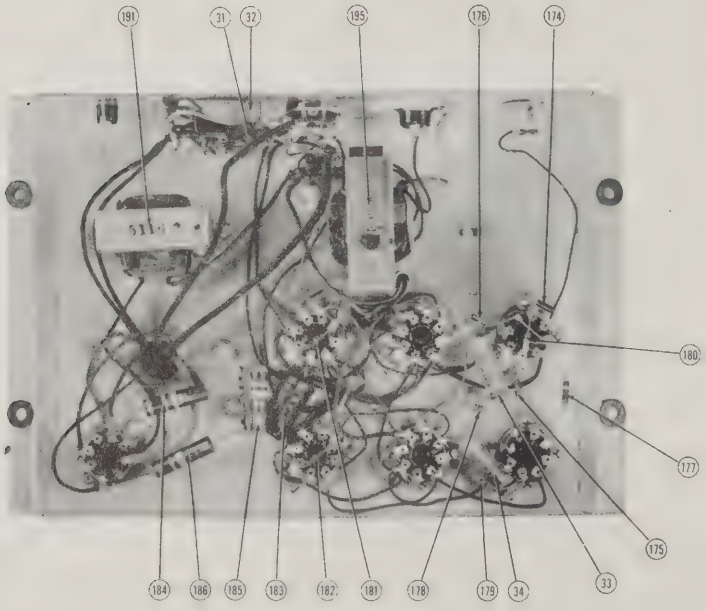
HOFFMAN MODELS
C1006, C1007

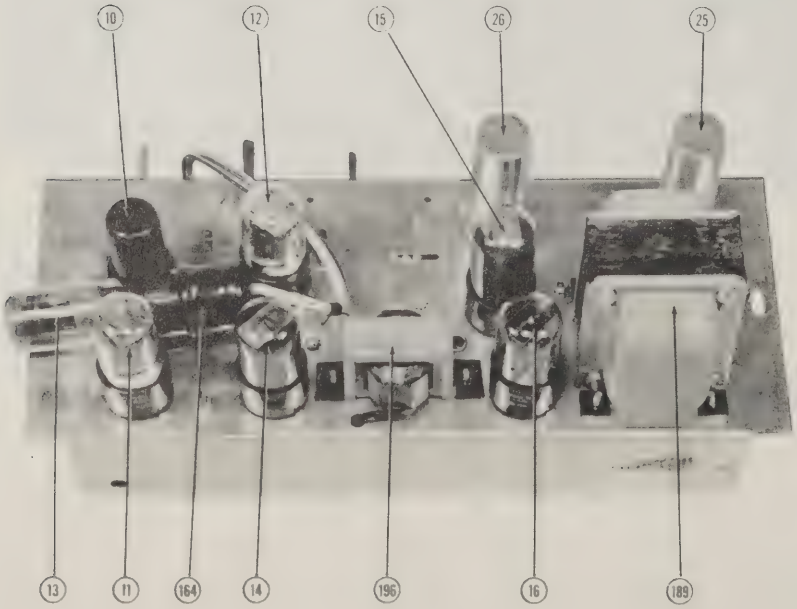
HOFFMAN MODELS
C1006, C1007


219
202
B2
226
B1
B4
B3
B6
B5
B8
B7
B10
B9
91
201
192
218
3
A15
2
A17
227
1
A6
194
208
8
9
28
7
6
A1
A13
212
5
A5
A16
A19
A8
A18
A7
A3
A9
209
221
4
220
211
A11
210

HOFFMAN MODELS C1006, C1007


23
21
22
19
17
18
197
188
24
190
20
198


191
31
32
195
176
174
180
177
175
184
186
185
183
182
181
178
179
34
33


10
12
15
26
25
13
11
164
14
196
16
189

PARTS LIST AND DESCRIPTIONS

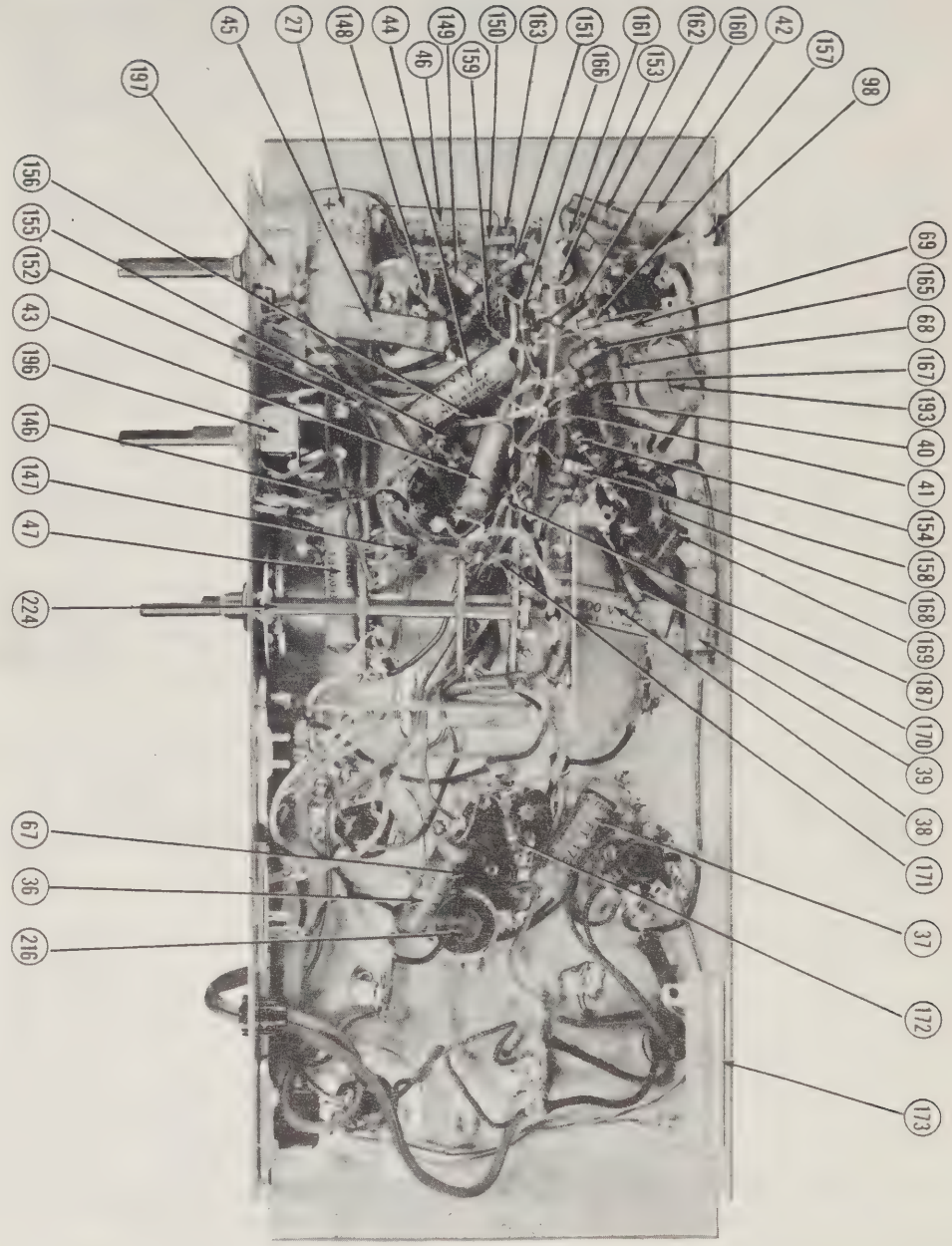
TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		HOFFMAN PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6BA6	6BA6	7BK	
2	Mixer	6BE6	6BE6	7CH	
3	Oscillator	6C4	6C4	6BG	
4	1st IF Amp.	6BA6	6BA6	7BK	
5	2nd IF Amp.	6BA6	6BA6	7BK	
6	Ratio Det.	6AL5	6AL5	6BT	
7	AM Det.-AVC-AF	6AT6	6AT6	7BT	
8	AF Amp.	6SJ7	6SJ7	8N	
9	Tone Amp.	6J5GT	6J5GT	6Q	
10	Mic. Amp.	6SJ7	6SJ7	8N	
11	Rec. 1st AF-Aux. Amp.	6SL7GT	6SL7GT	8BD	
12	Rec. 2nd AF-Vol. Ind. Amp.	6SL7GT	6SL7GT	8BD	
13	Volume Ind.	6U5/6G5	6U5/6G5	6R	
14	Power Output	6K6GT	6K6GT	7S	
15	Bias Osc.	6V6GT	6V6GT	7AC	
16	Rectifier	6X5GT	6X5GT	6S	
17	AF Amp.	6J5	6J5	6Q	
18	Phase Inv.	6J5GT	6J5GT	6Q	
19	Power Output	6K6GT	6K6GT	7S	
20	" "	6K6GT	6K6GT	7S	
21	" "	6K6GT	6K6GT	7S	
22	" "	6K6GT	6K6GT	7S	
23	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
24A	20	450	4200	AF44J4A	UP2245C	DY-312	EL-350	▲ Filter
B	20	450						■ "
C	20	25						Cathode Bypass
25A	20	450	4200	AF44J	UP2245	DY-2x20-450	EL-220	■ Filter
B	20	450						▲ "
26A	20	450	4200	AF44J4A	UP2245C	DY-312	EL-350	▲ Decoupling
B	20	450						■ "
C	20	25						Cathode Bypass
27	25	25	4205	PRS25/25	BR252A	M-25-25	TA-25	" "
28A	20	450	4200	AF44J	UP2245	DY-2x20-450	EL-220	■ Decoupling
B	20	450						▲ "
29	100	25	4205	PRS25/100	BRH251	M-100-25	UHC-102	Cathode Bypass
30	5	50	4209	PRS150/4	BR550	M-8-150	TA-55	Stabilizing Cap.
31	.01	600	4103	684-01	GT6S1	ST-6-01	TC-11	Line Filter
32	.01	600	4103	684-01	GT6S1	ST-6-01	TC-11	" "
33	.05	400	4101	484-05	GT4S5	ST-4-05	TC-15	Audio Coupling
34	.05	400	4101	484-05	GT4S5	ST-4-05	TC-15	" "
35	.05	400	4101	484-05	GT4S5	ST-4-05	TC-15	Recorder Motor Bypass
36	.001	600	4104	684-001	GT6D1	ST-6-001	TC-21	Bias Osc. Grid Cap.
37	.05	400	4101	484-05	GT4S5	ST-4-05	TC-15	Bias Osc. Screen Byp.
38	.05	400	4101	484-05	GT4S5	ST-4-05	TC-15	Audio Coupling
39	.01	600	4103	684-01	GT6S1	ST-6-01	TC-11	Output Cathode Bypass
40	.02	400	4106	484-02	GT4S2	ST-4-02	TC-12	Audio Coupling
41	.02	400	4106	484-02	GT4S2	ST-4-02	TC-12	Recorder 2nd AF Cath. Bypass
42	.1	200	4111	484-.1	GT2P1	ST-2-1	TC-1	Vol. Ind. Grid Filter
43	.02	400	4106	484-02	GT4S2	ST-4-02	TC-12	Tone Comp.
44	.05	400	4101	484-05	GT4S5	ST-4-05	TC-15	Audio Coupling
45	.02	400	4106	484-02	GT4S2	ST-4-02	TC-12	" "
46	.05	400	4101	484-05	GT4S5	ST-4-05	TC-15	1st AF Screen Bypass
47	.05	200	4100	484-05	GT2S5	ST-4-05	TC-15	Audio Coupling
48	.01	400	4112	484-01	GT4S1	ST-4-01	TC-11	" "
49	.01	400	4112	484-01	GT4S1	ST-4-01	TC-11	Tone Comp.
50	.002	600	4104	684-002	GT6D2	ST-6-002	TC-22	" "
51	.5	200	4110	484-.5	GT2P5	ST-2-5	TC-5	" "
52	.01	600	4103	684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
53	.2	200	4108	484-.2	GT2P2	ST-2-2	TC-2	AF Screen Bypass



DATE 1/4/49-#492-9

SEC #5-FOLDER #9

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
54	.05	200	4100	484-05	GT2S5	ST-4-05	TC-15	Audio Coupling
55	.05	400	4101	484-05	GT4S5	ST-4-05	TC-15	" "
56	.002	600	4104	684-002	GT6D2	ST-6-002	TC-22	De-emphasis
57	.005	600	4102	684-005	GT6D5	ST-6-005	TC-25	Audio Coupling
58	.001	600	4104	684-001	GT6D1	ST-6-001	TC-21	2nd IF Screen Bypass
59	.01	600	4103	684-01	GT6S1	ST-6-01	TC-11	1st IF Decoupling
60	.001	600	4104	684-001	GT6D1	ST-6-001	TC-21	1st IF Screen Byp.
61	.05	200	4100	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
62	.01	400	4112	484-01	GT4S1	ST-4-01	TC-11	RF Decoupling
63	.05	200	4100	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
64	.05	200	4100	484-05	GT2S5	ST-4-05	TC-15	" "
65	.05	200	4100	484-05	GT2S5	ST-4-05	TC-15	Filament Bypass
66	.01	600	4103	684-01	GT6S1	ST-6-01	TC-11	RF Byp. Pwr. Supply
67	10000	300	4020	1467-01	1D3S1	MW.3-11	1FM-11	Fixed Trimmer
68	330	300	4010	1468-0003	5W5T3	MO.5-33	1FM-33	Tone Comp.-Cer.
69	100	300	4000	1468-0001	5W5T1	MO.5-31	1FM-31	" " "
70	470	500	4003	1468-0005	5W5T5	MO.5-35	1FM-35	" "
71	270	300	4001	1468-00025	5W5T25	MO.5-325	1FM-325	" "
72	100	500	4000	1468-0001	5W5T1	MO.5-31	1FM-31	" "
73	270	500	4001	1468-00025	5W5T25	MO.5-325	1FM-325	" "
74	100	500	4000	1468-0001	5W5T1	MO.5-31	1FM-31	" "
75	470	500	4003	1468-0005	5W5T5	MO.5-35	1FM-35	" "
76	330	300	4010	1468-0003	5W5T3	MO.5-33	1FM-33	Diode Load-See Note-Cer.
77	330	300	4010	1468-0003	5W5T3	MO.5-33	1FM-33	Diode Load-See Note-Cer.
78	330	300	4010	1468-0003	5W5T3	MO.5-33	1FM-33	RF Bypass-Cer.
79	2200	300	4029	1467-002	1W5D2	MW.5-22	1FM-22	2nd IF Decoupling
80	100	300	4012	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter-Cer.
81	470	500	4003	1468-0005	5W5T5	MO.5-35	1FM-35	Mixer Screen Bypass
82	5000	300	4029	1467-005	1D5D5	MW.5-25	1FM-25	Mixer Decoupling-Cer.
83	100	300	4012	1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Coupling "
84	22	300	4021	1468-000025	5W5Q25	MO.5-425	MS-425	Osc. Grid Cap. "
85	50	300	4031	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Feedback "
86	50	300	4031	1469-00005	5R5Q5	MOS.5-45	MS-45	Fixed Trimmer "
87	100	300	4012	1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling "
88	100	300	4012	1468-0001	5W5T1	MO.5-31	1FM-31	RF Plate Decoup. "
89	470	500	4003	1468-0005	5W5T5	MO.5-35	1FM-35	RF Screen Bypass
90	100	300	4012	1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling "
91	500	500	4004	1469-0005	5R5T5	MOS.5-35	MS-35	Fixed Trimmer
24³	220	300	4026	1468-0025	5W5T25	MO.5-325	1FM-325	Mixer Cath. Byp. "

Note-When either Item 76 or 77 are replaced, replace both with capacitors of equal values.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	HOFFMAN PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
92A	250KΩ	½	4805	D13-130	M-64-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 92A per instructions
C	Switch		" "	41	SW-A	" " " " "
93A	500KΩ	½	4804	D13-133	M-60-Z	Mike Volume Control-Early production
B	Shaft		Not Req.	A	Not Req.	Attach to 93A per instructions
93A	250KΩ	½		D13-130	M-64-Z	Mike Volume Control-Later production
B	Shaft			A	Not Req.	Attach to 93A per instructions
94A	250KΩ	½	4805	D13-130	M-64-Z	Treble Control & (Tone Sw.)
B	Shaft		Not Req.	A	Not Req.	Attach to 94A per instructions
C	Switch		" "	41	SW-A	" " " " "
95	50KΩ	½	4806			Bass Control
96A	250KΩ	½	4805	D13-130	M-64-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 96A per instructions
C	Switch		" "	41	SW-A	" " " " "
97A	500KΩ	½	4804	D13-133	M-60-Z	Mike Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 97A per instructions
98	1000Ω	1	4810			Vol. Level Ind. Control

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
172	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. Bias Oscillator Grid
173	1500Ω	6.5	4701	AB-1500	Filter
174	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. AF Grid
175	4700Ω	½	4543	BTS-4700	Yl.-Vi.-Red AF Cathode
176	220KΩ	½	4500	BTS-220K	Red-Red-Yl. AF Plate Load
177	5 Meg.	½	4544	BTS-4.7 Meg.	Grn.-Blk.-Grn. Phase Inverter Grid
178	47KΩ	½	4537	BTS-47K	Yl.-Vi.-Or. Phase Inverter Plate Load
179	47KΩ	½	4537	BTS-47K	Yl.-Vi.-Or. Phase Inverter Cathode
180	10KΩ	½	4515	BTS-10K	Br.-Blk.-Or. Feedback
181	220KΩ	½	4500	BTS-220K	Red-Red-Yl. Output Grid
182	220KΩ	½	4500	BTS-220K	Red-Red-Yl. " "
183	220Ω	3	4706	ABA-220	Red-Red-Br. Output Cathode
184	10KΩ	2	4503	BT-2-10K	Br.-Blk.-Or. Bleeder
185	10KΩ	2	4503	BT-2-10K	Br.-Blk.-Or. "
186	10KΩ	2	4503	BT-2-10K	Br.-Blk.-Or. "
187	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. Tone Compensation

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA HOFFMAN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	REPLACEMENT DATA MERIT PART No.
188	117VAC @ 1.65A	920VCT .22ADC	5.2VAC @ 3.0A	6.4VAC @ 5.5A	5007		T22R35*	P-3156*
189	117VAC @ .46A	600VCT .056ADC	6.2VAC @ 2.8A		5000	P-6120*†	T22R30*	P-3151*#

†Mount vertically with universal mounting brackets. *Drill new mounting holes.
#Add series resistor to reduce plate voltage.

FILTER CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ~	REPLACEMENT DATA HOFFMAN PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
190	.2 A.	96Ω	5.5 Henries	5116		T-20C55*	C-3196	*Drill new mounting hole.
191	.1 A.	330Ω	9 Henries	5121	C-2305*	T-20C53*	C-2993	

SCRATCH CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ~	REPLACEMENT DATA HOFFMAN PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
192		4000Ω CT	2.5 Henries CT	5114				

TREBLE BOOST CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ~	REPLACEMENT DATA HOFFMAN PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
193		1900Ω	1 Henry	5240				

BASS BOOST CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ~	REPLACEMENT DATA HOFFMAN PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
194		450Ω	9 Henries	5113				

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
195	4100Ω CT	8Ω	460Ω CT	1.4Ω	5120	A-3870§	T22S60*	A-2904§	§Drill one new mounting hole.
196	10KΩ	3.2Ω approx.	850Ω	.6Ω	5119	A-3823	T22S47§	A-2936	*Drill new mounting holes.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HOFFMAN PART No.	IRC PART No.	
99	270KΩ	½	4545	BTS-270K	Red-Vi.-Yl. RF Grid
100	56Ω	½	4561		Grn.-Blue-Blk. RF Cathode
101	33KΩ	1	4556	BTA-33K	Or.-Or.-Or. RF Screen
102	1500Ω	½	4534	BTS-1500	Br.-Grn.-Red RF Decoup.
103	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. AVC Network
104	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. " "
105	22Ω	½	4560		Red-Red-Blk. Parasitic Suppressor
106	33KΩ	1	4556	BTA-33K	Or.-Or.-Or. Conv. Screen
107	1500Ω	½	4534	BTS-1500	Or.-Grn.-Red Conv. Decoup.
108	22KΩ	½	4501	BTS-22K	Red-Red-Or. Osc. Grid
109	4700Ω	2	4551	BT-2-4700	Yl.-Vi.-Red Osc. Decoup.
110	56Ω	½	4561		Grn.-Blue-Blk. Conv. Cathode
111	56Ω	½	4561		Grn.-Blue-Blk. 1st IF Cathode
112	33KΩ	1	4556	BTA-33K	Or.-Or.-Or. 1st IF Screen
113	1500Ω	½	4534	BTS-1500	Br.-Grn.-Red 1st IF Decoupling
114	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. Diode Filter
115	56Ω	½	4561		Grn.-Blue-Blk. 2nd IF Cathode
116	33KΩ	1	4556	BTA-33K	Or.-Or.-Or. 2nd IF Screen
117	1500Ω	½	4534	BTS-1500	Br.-Grn.-Red 2nd IF Decoup.
118	120Ω	½	4546		Br.-Red-Br. RF Filter
119	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. De-emphasis
120	390Ω	½	4549		Or.-White-Br. Bal. Resistor
121	390Ω	½	4549		Or.-White-Br. " "
122	6800Ω	½	4557	BTS-6800	Blue-Gray-Red Ratio Det. Diode Load
123	6800Ω	½	4557	BTS-6800	Blue-Gray-Red " " " "
124	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. AVC Network
125	10 Meg.	½	4505	BTS-10 Meg.	Br.-Blk.-Blue Earphone Amp. Grid
126	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Earphone Amp. Plate Load
127	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Tone Compensation
128	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. " "
129	2.2 Meg.	½	4502	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
130	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. Diode Load
131	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. " "
132	220KΩ	½	4500	BTS-220K	Red-Red-Yl. Series Mic.
133	220KΩ	½	4500	BTS-220K	Red-Red-Yl. Tone Compensation
134	220KΩ	½	4500	BTS-220K	Red-Red-Yl. 1st AF Grid
135	2500Ω	½		BTS-2700	Red-Grn.-Red 1st AF Cathode
136	220KΩ	½	4500	BTS-220K	Red-Red-Yl. 1st AF Plate
137	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Screen Dropping
138	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. 1st AF Decoupling
139	2.2 Meg.	½	4502	BTS-2.2 Meg.	Red-Red-Grn. Bleeder
140	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. Tone Amp. Grid
141	2500Ω	½		BTS-2700	Red-Grn.-Red Tone Amp. Cathode
142	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Tone Amp. Cathode
143	22KΩ	½	4501	BTS-22K	Red-Red-Or. Tone Amp. Plate Load
144	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Phono Shunt
145	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
146	220KΩ	½	4500	BTS-220K	Red-Red-Yl. Isolation
147	2500Ω	½		BTS-2200	Red-Grn.-Red Auxiliary Amp. Cathode
148	220KΩ	½	4500	BTS-220K	Red-Red-Yl. Mic. Amp. Grid
149	2500Ω	½		BTS-2700	Red-Grn.-Red Mic. Amp. Cathode
150	2.2 Meg.	½	4502	BTS-2.2 Meg.	Red-Red-Grn. Mic. Amp. Screen Dropping
151	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Mic. Amp. Plate Load
152	220KΩ	½	4500	BTS-220K	Red-Red-Yl. Isolation
153	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Mic. Amp. Decoupling
154	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Decoupling
155	2200Ω	½	4512	BTS-2200	Red-Red-Red Rec. 1st AF Cathode
156	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. Rec. 1st AF Plate Load
157	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Tone Compensation
158	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. " "
159	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. Recorder 2nd AF Grid
160	5 Meg.	½		BTS-4.7 Meg.	Grn.-Blk.-Grn. Vol. Ind. Amp. Grid
161	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. Vol. Ind. Amp. Plate Load
162	15KΩ	1	4539	BTA-15K	Br.-Grn.-Or. Vol. Ind. Amp. Cathode Dropping
163	100KΩ	1	4558	BTA-100K	Br.-Blk.-Yl. Voltage Dropping
164	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. Vol. Ind. Plate Load
165	2500Ω	½		BTS-2700	Red-Grn.-Red Recorder 2nd AF Cathode
166	5000Ω	½		BTS-4700	Grn.-Blk.-Red " " " "
167	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. Recorder 2nd AF Plate Load
168	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Output Grid
169	1000Ω	1	4522	BTA-1000	Br.-Blk.-Red Output Cathode
170	22KΩ	½	4501	BTS-22K	Red-Red-Or. Tone Compensation
171	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. " "

DATE 1/49-#492-9 SET #4-FOLDER #9

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			HOFFMAN PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-678		
197	PM	8Ω	9007	Mod. P15-Q		
	CONE DIA.	VC DIA.				
198	14-5/8"	4"				
	FIELD	VC IMP.				
199	PM		9030‡			‡Aux. speaker not used in all models
	CONE DIA.	VC DIA.				
200	4"x6"					

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	HOFFMAN PART No.	MEISSNER PART No.	
201	Loop Ant.	.2Ω	.2Ω	55210		
202	Loop Load. Coil		4.4Ω	5265		
203	FM Ant.Coil		0Ω	5253		
204	BC RF Coil	1Ω	7.9Ω	5264		
205	FM " "		0Ω	5252		
206	AM Osc.Coil		5.7Ω	5263		
207	FM " "		0Ω	5251		
208	AM Input IF	12Ω	12Ω	5276		
209	FM " "	1Ω	.4Ω	5274		
210	AM Output IF	12Ω	12Ω	5277		
211	FM Inter.IF	1.2Ω	.4Ω	5275		
212	FM Det. Trans.	1.9Ω	.1Ω	5278		
213	RF Plate Choke		2.3Ω	5254		
214	Osc. Plate Choke		2.3Ω	5254		
215	Fil. Choke		0Ω	5266		
216	Bias Osc. Coil	0Ω	5.1Ω	5239		

DIAL LIGHT

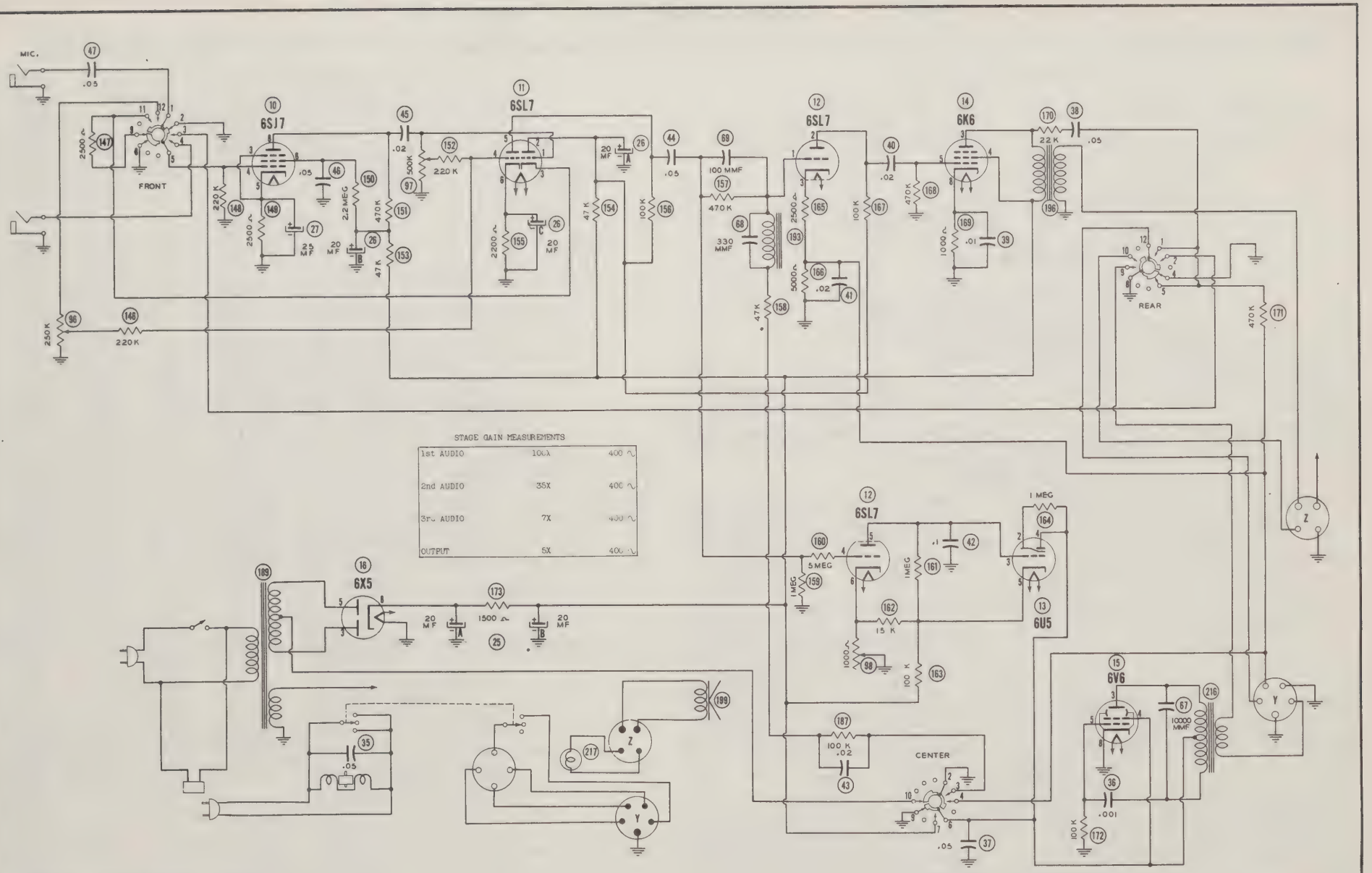
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HOFFMAN PART No.		
217	Screw	6-8	0.25	Blue			Type 46
218-221	Bayonet	"	"	"			Type 44

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	HOFFMAN PART No.	ASTATIC PART No.	
222		QT3-J	QT3-M Original Part

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
223A	Band Switch	6014	RF
B	" "	6015	Audio
224	Switch	66000	Selector
225	"	6007	Speaker
226	P.B. Assembly	55200	
227	3 Gang Var. Cap.	4408	(20-480MMF, 20-480MMF, 20-345MMF)
A5	Trimmer	4313	BC Osc. Adj.
A6	Padder	4301	" " "
A7	Trimmer	4313	BC Ant. Adj.
A8	"	4313	BC RF Adj.
A18	"	4316	FM Ant. Adj.
A19	"	4316	FM RF Adj.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1949

492-9

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	0V.	0V.	6.4VAC	0V.	270VDC	110VDC	1VDC	-
2	6BE6	-31VDC§	.5VDC	6.4VAC	0V.	290VDC	60VDC	0V.	-
3	6C4	190VDC	0V.	6.4VAC	0V.	190VDC	-9VDC§	0V.	-
4	6BA6	-.5VDC	0V.	6.4VAC	0V.	260VDC	110VDC	1VDC	-
‡ 5	6BA6	0V.	0V.	6.4VAC	0V.	260VDC	110VDC	1VDC	-
‡ 6	6AL5	.5VDC	-.5VDC	6.4VAC	0V.	-.5VDC	0V.	0V.	-
7	6AT6	-.5VDC	0V.	6.4VAC	0V.	-.5VDC	-.5VDC	140VDC	-
8	6SJ7	0V.	6.4VAC	0V.	0V.	2.2VDC	43VDC	0V.	100VDC
9	6J5GT	0V.	0V.	190VDC	230VDC	40VDC	90VDC	6.7VAC	90VDC
** 10	6SJ7	0V.	0V.	1VDC	0V.	1VDC	18VDC	6.2VAC	70VDC
** 11	6SL7GT	0V.	200VDC	0V.	0V.	130VDC	1.6VDC	6.2VAC	0V.
** 12	6SL7GT	0V.	160VDC	25VDC	0V.	65VDC	2.6VDC	6.2VAC	0V.
** 13	6U5/6G5	-	-	-	-	-	-	-	-
** 14	6K6GT	0V.	0V.	230VDC	240VDC	0V.	0V.	6.2VAC	22VDC
** 15	6V6GT	0V.	0V.	240VDC	240VDC	-47VDC	0V.	6.2VAC	0V.
** 16	6X5GT	0V.	6.2VAC	300VAC	0V.	300VAC	0V.	0V.	330VDC
17	6J5	0V.	6.4VAC	70VDC	0V.	0V.	70VDC	0V.	14VDC
18	6J5GT	0V.	6.4VAC	230VDC	0V.	30VDC	2.4VDC	0V.	75VDC
19	6K6GT	0V.	6.4VAC	330VDC	300VDC	0V.	0V.	0V.	24VDC
20	6K6GT	0V.	6.4VAC	330VDC	300VDC	0V.	0V.	0V.	24VDC
21	6K6GT	0V.	6.4VAC	330VDC	300VDC	0V.	0V.	0V.	24VDC
22	6K6GT	0V.	6.4VAC	330VDC	300VDC	0V.	0V.	0V.	24VDC
23	5U4G	0V.	350VDC	0V.	460VAC	0V.	460VAC	0V.	350VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	2.5 Meg.	0Ω	.1Ω	0Ω	32KΩ	65K	56Ω	-
2	6BE6	22KΩ	56Ω	.1Ω	0Ω	32KΩ	65KΩ	2.5 Meg.	-
3	6C4	35KΩ	INF.	.1Ω	0Ω	35KΩ	22KΩ	0Ω	-
4	6BA6	2.5 Meg.	0Ω	.1Ω	0Ω	32KΩ	64KΩ	56Ω	-
‡ 5	6BA6	.4Ω	0Ω	.1Ω	0Ω	32KΩ	64KΩ	56Ω	-
‡ 6	6AL5	7.2KΩ	7.2KΩ	.1Ω	0Ω	INF.	0Ω	INF.	-
7	6AT6	10 Meg.	0Ω	.1Ω	0Ω	480KΩ	250KΩ	75KΩ	-
8	6SJ7	0Ω	.1Ω	0Ω	150KΩ	2.5KΩ	2.2 Meg.	0Ω	300KΩ
9	6J5GT	0Ω	0Ω	52KΩ	75KΩ	1 Meg.	47KΩ	.1Ω	50KΩ
** 10	6SJ7	0Ω	0Ω	2.5KΩ	220KΩ	2.5KΩ	2.2 Meg.	.1Ω	520KΩ
** 11	6SL7GT	500KΩ	140KΩ	INF.	150KΩ	240KΩ	2.2KΩ	.1Ω	0Ω
** 12	6SL7GT	150KΩ	240KΩ	7.2KΩ	6 Meg.	1 Meg.	1KΩ	.1Ω	0Ω
** 13	6U5/6G5	-	-	-	-	-	-	-	-
** 14	6K6GT	0Ω	0Ω	90KΩ	90KΩ	470KΩ	140KΩ	.1Ω	1KΩ
** 15	6V6GT	0Ω	0Ω	90KΩ	90KΩ	100KΩ	0Ω	.1Ω	0Ω
** 16	6X5GT	0Ω	.1Ω	200Ω	INF.	250Ω	INF.	0Ω	90KΩ
17	6J5	0Ω	.1Ω	250KΩ	15KΩ	1 Meg.	280KΩ	0Ω	4.7KΩ
18	6J5GT	0Ω	.1Ω	75KΩ	7 Meg.	5.2 Meg.	INF.	0Ω	47KΩ
19	6K6GT	0Ω	.1Ω	30KΩ	30KΩ	220KΩ	INF.	0Ω	220Ω
20	6K6GT	0Ω	.1Ω	30KΩ	30KΩ	220KΩ	INF.	0Ω	220Ω
21	6K6GT	0Ω	.1Ω	30KΩ	30KΩ	220KΩ	INF.	0Ω	220Ω
22	6K6GT	0Ω	.1Ω	30KΩ	30KΩ	220KΩ	INF.	0Ω	220Ω
23	5U4G	INF.	30KΩ	INF.	110Ω	INF.	120Ω	INF.	30KΩ

**TAKEN IN RECORD POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

. RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

VOLUME INDICATOR ADJUSTMENT

The recording level on the wire must be maintained within definite limits in order to obtain good performance from the wire recorder. If the recording level is too high, a permanent record that is difficult to erase will result. If the recording level is too low, the reproduction on playback will be noisy because of the low signal-to-noise ratio. To adjust the volume level indicator for correct indication of volume, proceed as follows:

1. Place switch in RECORD position.
2. Turn radio volume and microphone volume controls to minimum volume (counter-clockwise) position.
3. Rotate volume level indicator control, Item 98 (slot adjustment at rear of amplifier chassis) in a counter-clockwise direction until the pattern on the indicator tube overlaps. If the indicator pattern cannot be made to overlap:
   A. Replace indicator tube.
   B. Replace 6SL7 tube used as 3rd Amp. and volume indicator amplifier.
   C. Make necessary voltage checks according to voltage chart.
4. If indicator tube pattern overlaps satisfactorily, back off on the adjustment of the control until the tube pattern is as wide open as it will go. Then move the control adjustment until the pattern JUST BEGINS TO CLOSE. This is the final and correct adjustment.

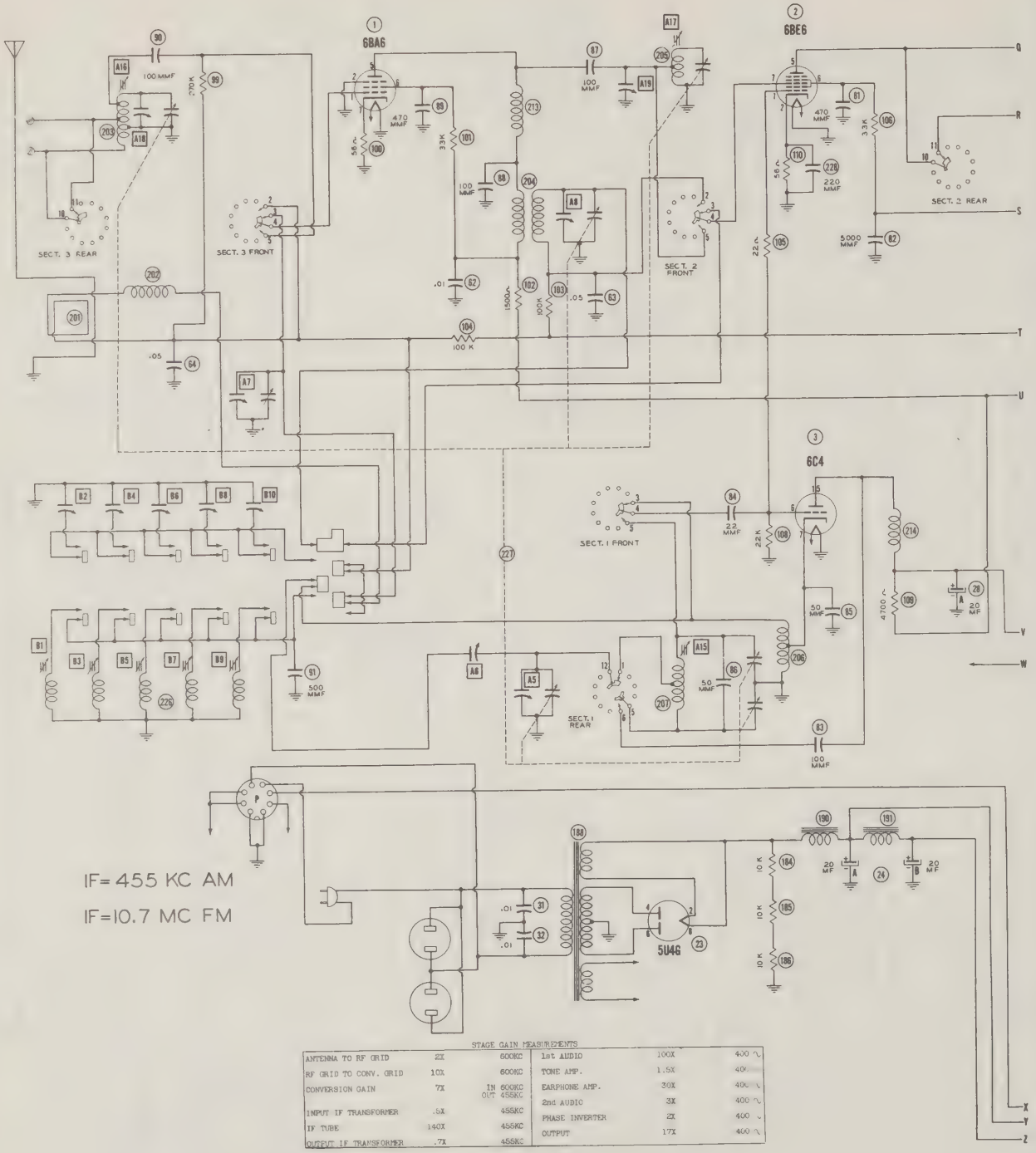
If the wire recorder is now operated so that volume peaks just close the pattern on the indicator tube, no trouble should be experienced in erasing the original material when using the wire for subsequent recordings.

PUSHBUTTON ADJUSTMENTS

The frequency ranges for the five pushbuttons in order from left to right are as follows: 550-890KC, 550-890KC, 890-1570KC, 890-1570KC and 1000-1740KC.

1. Turn receiver on and allow it to warm up for at least fifteen minutes.
2. Make up a list of stations desired to be set up ranging from low to high frequencies, making certain that each station falls within the range of its button.
3. Depress the "manual" button and manually tune in the first station.
4. Depress the first button and adjust B1 for clearest reception of selected station.
5. Adjust B2 for maximum volume.
6. Check adjustment by alternately depressing the "manual" button and the first button and readjusting B1 and B2 for maximum volume.
7. To set up the remaining buttons follow the procedure outlined adjusting B3, B5, B7 & B9 to tune in desired stations and B4, B6, B8 and B10 for maximum volume.

DATE 1/49-#49-6 SET #54-FOLDER 9

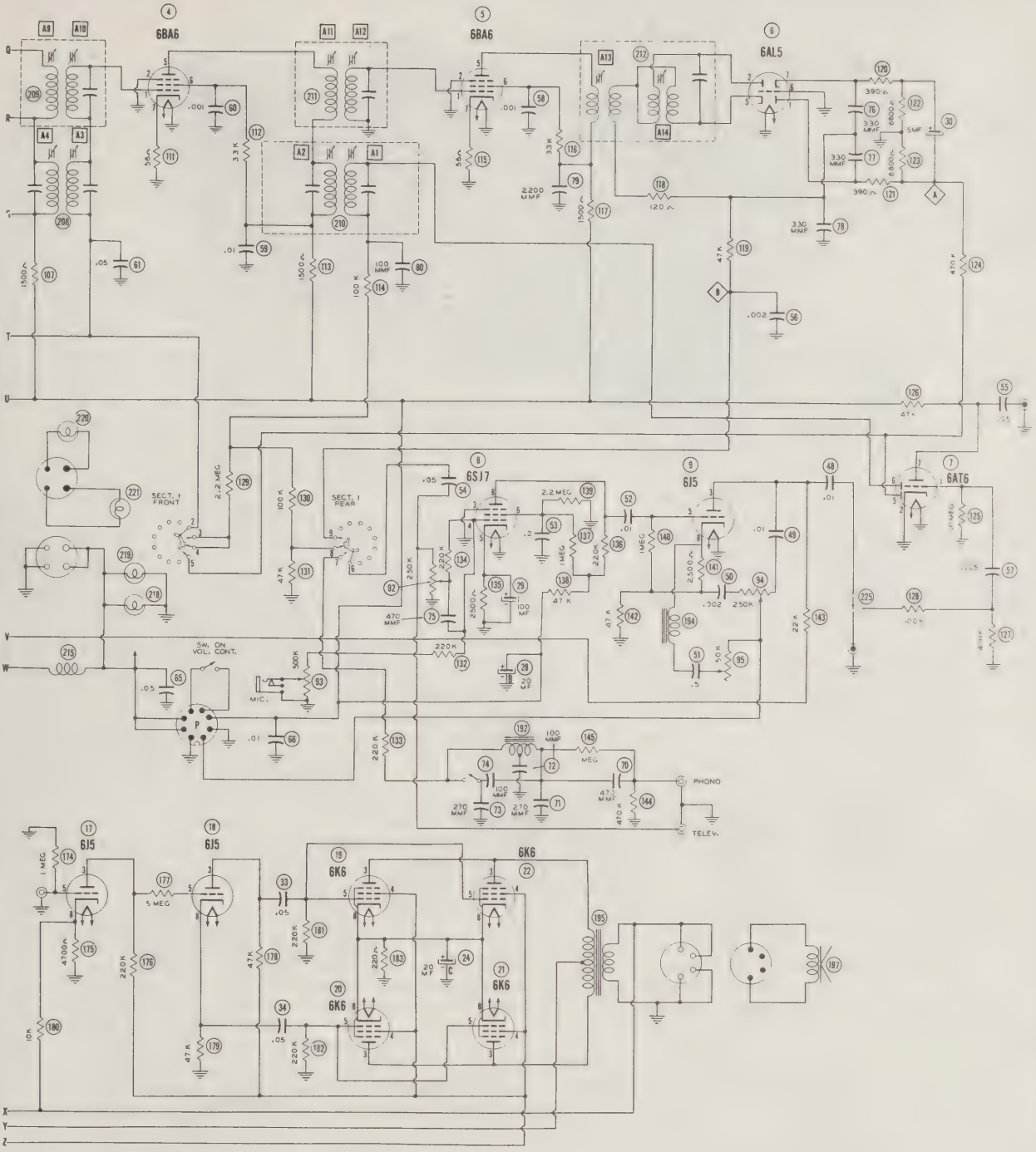


STAGE GAIN MEASUREMENTS

ANTENNA TO RF GRID	2X	600KC	1st AUDIO	100X	400 ~
RF GRID TO CONV. GRID	10X	600KC	TONE AMP.	1.5X	400 ~
CONVERSION GAIN	7X	IN 600KC OUT 455KC	EARPHONE AMP.	30X	400 ~
INPUT IF TRANSFORMER	.5X	455KC	2nd AUDIO	3X	400 ~
IF TUBE	140X	455KC	PHASE INVERTER	2X	400 ~
OUTPUT IF TRANSFORMER	.7X	455KC	OUTPUT	17X	400 ~

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

©Howard W. Sams & Co., Inc. 1949



© Howard W. Sams & Co., Inc. 1949

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cap. fully closed and set pointer 13/16" from left edge of dial backplate. This is the calibration mark referred to in Steps below.
AM Alignment must be done before FM Alignment.
Use insulated alignment screwdriver for all adjustment.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to center AM stator of tuning cap. Low side to chassis.	455KC	AM (Center position)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2	.1 MFD & 400Ω carbon res. in series	High side to external ant. lead. Low side to chassis.	1650KC	"	"	"	A5	" " " "
3	"	"	535KC	"	Tuning cap. fully closed	"	A6	Adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.
4	"	"	1400KC	"	Tune for maximum output.	"	A7,A8	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If VTVM is not available, a 20,000Ω per volt DC meter may be used.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	Direct	High side to center FM stator of tuning cap. Low side to chassis.	10.7MC (Unmodulated)	FM (fully clockwise)	Tuning cap. fully open.	DC probe to Point Ⓐ. Common to chassis	A9,A10 A11, A12, A13	Solder a 5000Ω carbon resistor across each secondary of 1st and 2nd FM-IF Transformers (209) & (211). Adjust A9 thru A13 for maximum deflection.
6	"	"	"	"	"	DC probe to Point Ⓑ. Common to chassis	A14	Adjust for zero deflection. Remove two 5000Ω resistors and continue with FM-RF Alignment in Steps 8.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

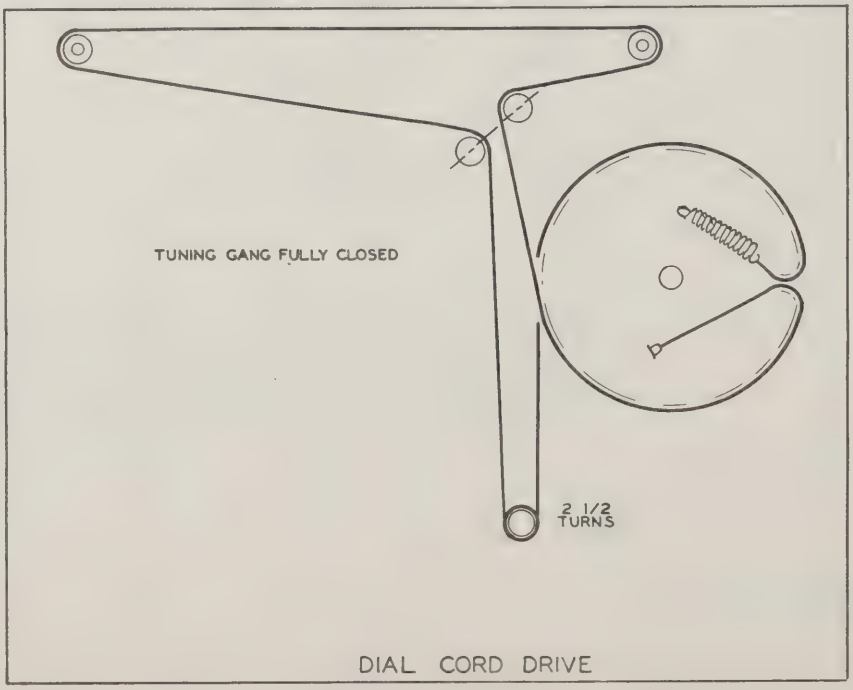
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	.01 MFD	High side to Pin 1 (grid) of 6BA6 1st IF Tube (4). Low side to chassis.	10.7MC (Freq. modulation)	FM	Tuning cap. fully open.	Vertical input to Point Ⓐ. Ground to chassis.	A13, A12, A11	Disconnect 5 MFD cap. from Point Ⓐ. Adjust A11, A12 and A13 for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
6	.01 MFD	High side to center FM stator of tuning cap. Low side to chassis.	"	"	"	"	A10,A9	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. Reconnect 5 MFD cap. to Point Ⓐ.
7	.01 MFD	High side to Pin 1 (grid) of 6BA6 1st IF Tube (4). Low side to chassis.	"	"	"	Vertical input to Point Ⓑ. Ground to chassis.	A14	Adjust for maximum straightness of crossover lines with crossover occurring at center of pattern per Fig. 2. Continue with FM-RF Alignment in Step 8.

FM RF ALIGNMENT

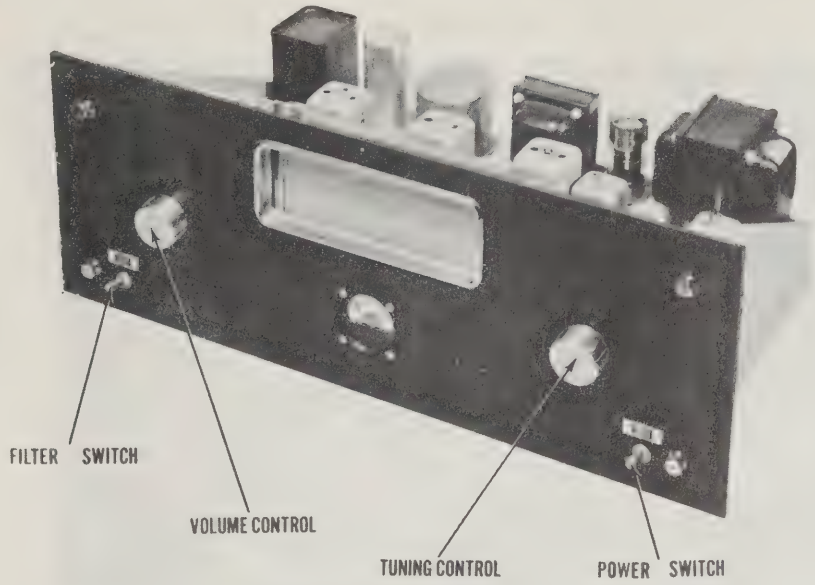
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
8	2-150Ω carbon res.	Across FM Antenna terminal.	100MC (Unmodulated)	FM	3-11/32" from calibration mark.	DC probe to Point Ⓐ. Common to chassis.	A15	Adjust for maximum deflection.
9	"	"	90MC (Unmodulated)	"	Tune for maximum deflection.	"	A16, A17	" " " "
10	"	"	106MC (Unmodulated)	"	"	"	A18, A19	Adjust for maximum deflection. Repeat Steps 8, 9 & 10 until no further improvement can be made.

FIG. 1

FIG. 2



DIAL CORD DRIVE



KAPPLER MODEL 102T

TRADE NAME	Kappler, Model 102T
MANUFACTURER	The Kappler Co., 7302 Melrose Ave., Los Angeles 46, Calif.
TYPE SET	AC Operated AM Superheterodyne Tuner with Power Supply
TUBES (SEVEN)	Types, 7B7 RF Amp., 7N7 Oscillator, 7B7 1st IF Amp., 7B7 2nd IF Amp., 7N7 Det.-AVC-AF, 7N7 Audio Output, 5AZ4 or 5Y3 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	550-1700KC RATING .39 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Use frequency modulated signal with 60 ∿ modulation and 40KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

In alignment of A9 & A10 they should be adjusted so that tuning meter indicates a succession of two peaks as receiver is tuned across the station. Correct adjustment is indicated when the two peaks have equal deflection on meter and the dip in the center is approximately equal to one scale division on the meter. The reading on the meter at this minimum position should not be less than five when this adjustment is being made.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1	.05 MFD	High side to Pin 6 (grid) of 7B7 2nd IF Tube (4). Low side to chassis.	456KC (Freq. Mod.)	Tuning cap. fully open.	Vertical input to Point A. Ground to chassis.	A1,A2	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
2	.05 MFD	High side to Pin 6 (grid) of 7B7 1st IF Tube (3). Low side to chassis.	"	"	"	A3,A4	"
3	.05 MFD	High side to Pin 6 (grid) of 7B7 RF Tube (1). Low side to chassis.	"	"	"	A5,A6	"
4	.05 MFD	High side to ant. terminal "A" with link connected. Low side to chassis.	1300KC	1300KC		A7	Adjust for maximum dip between two peaks on tuning meter.
5	.05 MFD	"	700KC	700KC		A8	Adjust for maximum dip between two peaks on tuning meter. Repeat Steps 4 & 5 until no further improvement can be made.
6	.05 MFD	"	1300KC	Tune to dip between two peaks.		A9	Adjust per pre-alignment instructions.
7	.05 MFD	"	700KC	"		A10	Adjust per pre-alignment instructions. Repeat Steps 6 & 7 until no further improvement can be made.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

KAPPLER MODEL 102T

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KAPPLER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	7B7	7B7	8V	
2	Oscillator	7N7	7N7	8AC	
3	1st IF Amp.	7B7	7B7	8V	
4	2nd IF Amp.	7B7	7B7	8V	
5	Det.-AVC-AF	7N7	7N7	8AC	
6	Audio Output	7N7	7N7	8AC	
7A	Rectifier	5AZ4	5AZ4		
B	"	5Y3	5Y3	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KAPPLER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	40	450		AF88J	UP4445	DY-2x40-450	EL-240	■▲ Filter
B	40	450						● Decoupling Filter
9	3.5	330						
10A	.1	600		630/.1-.1-.1*	DYR6111*	XDMR6-3X.1*	BP-316*	Cathode Fol. Decoup. AVC Filter
B	.2	600						
11	1	500		630/1.0	YAT6100	XLXPU-6-1	CNT-106	Audio Coupling
12	.01	600		684-01	DT6S1	ST-6-01	TC-11	" "
13A	.1	600		630/.1-.1-.1	DYR6111	XDMR6-3X.1	BP-316	2nd IF Plate Decoup.
B	.1	600						2nd IF Screen Bypass
C	.1	600						2nd IF Cath. Byp.
14A	.1	600		630/.1-.1-.1	DYR6111	XDMR6-3X.1	BP-316	1st IF Plate Decoup.
B	.1	600						1st IF Screen Byp.
C	.1	600						1st IF Cathode
15A	.1	600		630/.1-.1-.1	DYR6111	XDMR6-3X-.1	BP-316	AVC Filter
B	.1	600						" "
C	.1	600						" "
16A	.1	600		630/.1-.1-.1	DYR6111	XDMR6-3X-.1	BP-316	RF Plate Decoup.
B	.1	600						RF Screen Bypass
C	.1	600						RF Cathode Bypass
17	.05	600		630/.05	DYR6005	XDMR-6-05	BP-56	Osc. Feedback
18	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Det. Plate Bypass
19	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass
20	50	300		1468-00005	5W5Q5	MO.5-45	1FM-45	IF Coupling
21	1000	500		1467-001	1W5D1	MW.5-21	1FM-21	Fixed Trimmer
22	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Grid Cap.

*Parallel two sections.

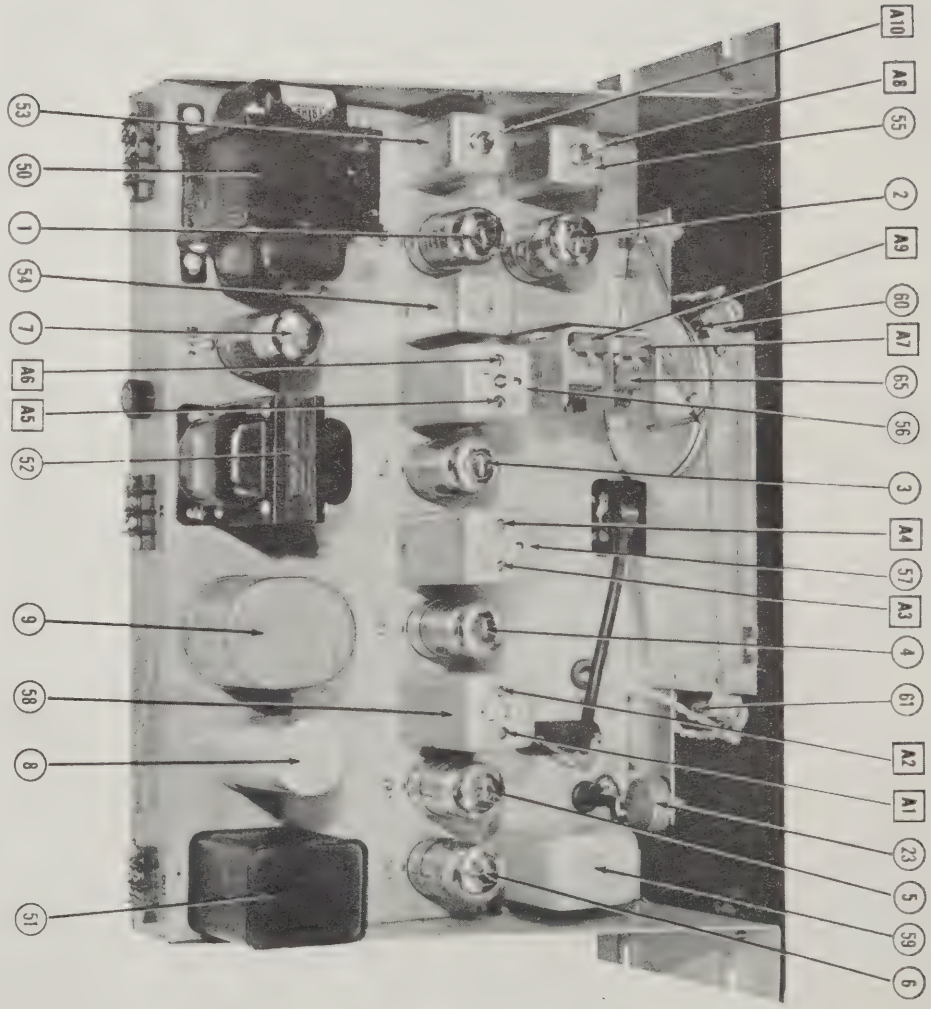
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KAPPLER PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
23A	15KΩ	½		D16-118	M-34-V	Volume Control
B	Shaft			A	Not Req.	Attach to 23A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KAPPLER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
24	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
25	150Ω	½		BW-½-150	Br.-Grn.-Br. RF Cathode
26	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Screen Dropping
27	1000Ω	½		BTS-1000	Br.-Blk.-Red RF Plate Decoupling
28	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Oscillator Grid
29	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
30	150Ω	½		BW-½-150	Br.-Grn.-Br. 1st IF Cathode
31	4700Ω	½		BTS-4700	Yl.-Vi.-Red 1st IF Screen Dropping
32	1000Ω	½		BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
33	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
34	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. " "
35	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. " "
36	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. Diode Load
37	150Ω	½		BW-½-150	Br.-Grn.-Br. 2nd IF Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	KAPPLER PART No.	IRC PART No.	
38	4700Ω	½		BTS-4700	Yl.-Vi.-Red 2nd IF Screen Dropping
39	1000Ω	½		BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoupling
40	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Detector Cathode
41	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. AF Grid
42	1500Ω	½		BTS-1500	Br.-Grn.-Red AF Cathode
43	30KΩ	1		BTA-33K	Or.-Blk.-Or. AF Cathode
44	4700Ω	½		BTS-4700	Yl.-Vi.-Red Tone Compensation
45	15KΩ	½		BTS-15K	Br.-Grn.-Or. Detector Plate Decoupling
46	15KΩ	10		AB-15K	Decoupling
47	25KΩ	10		AB-25K	Voltage Dropping
48	330Ω	1		BW-1-330	Or.-Or.-Br. Tuning Indicator Network
49	100Ω	½		BW-½-100	Br.-Blk.-Br. Series Tuning Indicator

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	KAPPLER PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
50	117V AC @ .39A	530V CT .037ADC	5.0V AC @ 2.0A	6.5V AC @ 2.9A		P-4077†‡	T22R30†	P-3148†

†Drill new mounting holes. ‡Add series resistor to reduce plate voltage.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000)	KAPPLER PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
51	.087A	660Ω	40 Henries		6-1003†	T20C53†	C-3192†	†Drill new mounting holes.

TRANSFORMER (AUDIO)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KAPPLER PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
52	4500Ω	500Ω	100Ω	36Ω					

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	KAPPLER PART No.	MEISSNER PART No.
53	Ant. Coil	50Ω	2.5Ω		
54	RF Coil	12Ω	5Ω		
55	Osc. Coil		3.8Ω		
56	1st IF	5Ω	15.7Ω		
57	2nd IF	24Ω	24Ω		
58	3rd IF	24Ω	24Ω		
59	10KC Filter				

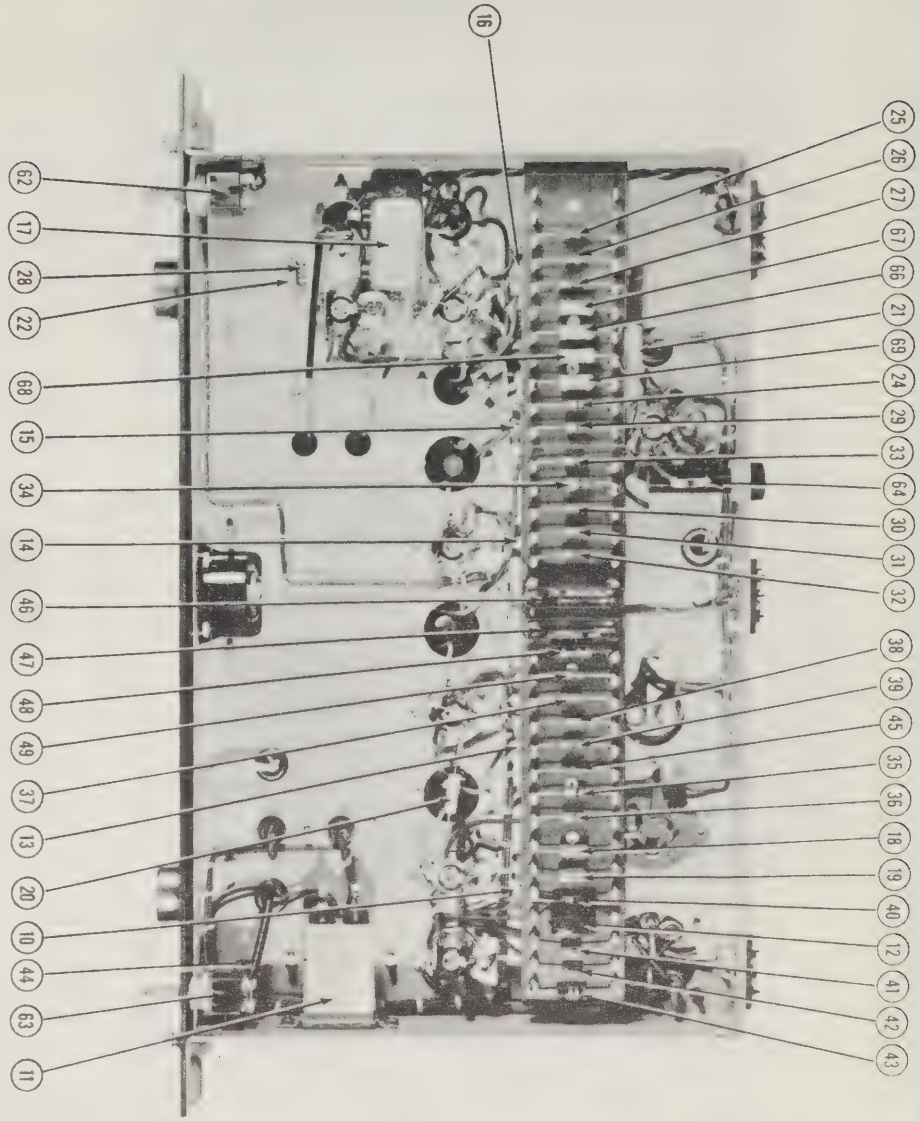
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					KAPPLER PART No.		
60	Bayonet	6-8	0.25	Blue			Type 44
61	"	6-8	0.25	"			" "

MISCELLANEOUS

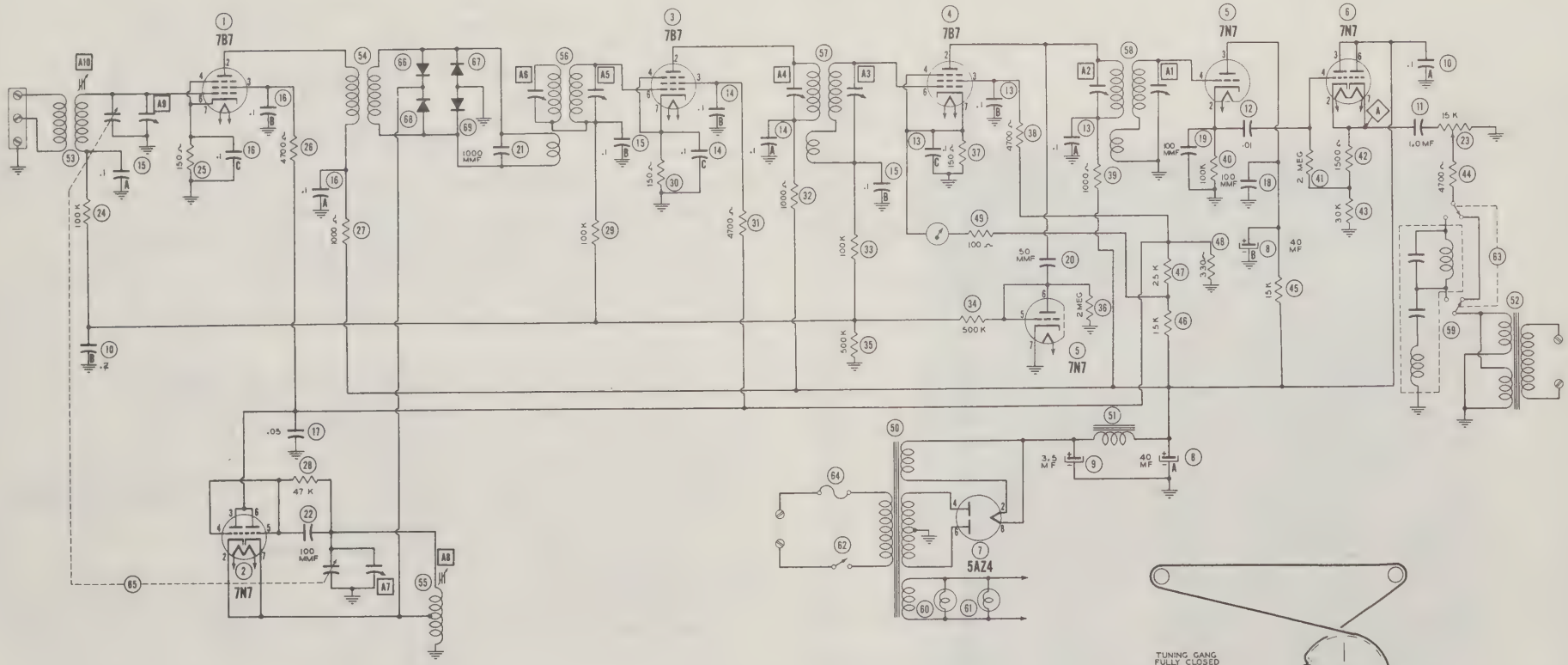
ITEM No.	PART NAME	KAPPLER PART No.	NOTES
62	Switch		On-Off
63	"		10KC Filter
64	Fuse		
65	2 Gang Var. Cap		(34-429MMF, 34-212MMF)
66	Crystal		
67	"		
68	"		
69	"		

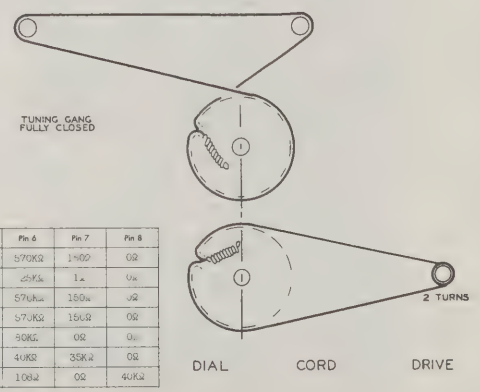
CHASSIS—BOTTOM VIEW



KAPPLER MODEL 102T

KAPPLER MODEL 102T





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	6.5VAC	260VDC	75VDC	1.2VDC	0V.	-.2VDC	1.2VDC	0V.
2	7N7	6.5VAC	0V.	80VDC	-9.2VDC§	-9.2VDC§	80VDC	0V.	0V.
3	7B7	6.5VAC	260VDC	75VDC	1.2VDC	0V.	-.4VDC	1.2VDC	0V.
4	7B7	6.5VAC	260VDC	75VDC	1.2VDC	0V.	-.2VDC	1.2VDC	0V.
5	7N7	6.5VAC	15VDC	260VDC	0V.	-.6VDC	-.6VDC	0V.	0V.
6	7N7	6.5VAC	110VDC	260VDC	1.5VDC	1.5VDC	260VDC	110VDC	0V.
7	5AZ4	0V.	290VDC	260VDC	265VAC	0V.	265VAC	0V.	290VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	.1Ω	40KΩ	30KΩ	150Ω	0Ω	570KΩ	150Ω	0Ω
2	7N7	.1Ω	1Ω	25KΩ	47KΩ	47KΩ	25KΩ	1Ω	0Ω
3	7B7	.1Ω	40KΩ	30KΩ	150Ω	0Ω	570KΩ	150Ω	0Ω
4	7B7	.1Ω	40KΩ	30KΩ	150Ω	0Ω	570KΩ	150Ω	0Ω
5	7N7	.1Ω	100KΩ	50KΩ	24K	0KΩ	50KΩ	0Ω	0Ω
6	7N7	.1Ω	35KΩ	40KΩ	35KΩ	35KΩ	40KΩ	35KΩ	0Ω
7	5AZ4	INF.	40KΩ	40KΩ	115Ω	INF.	108Ω	0Ω	40KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

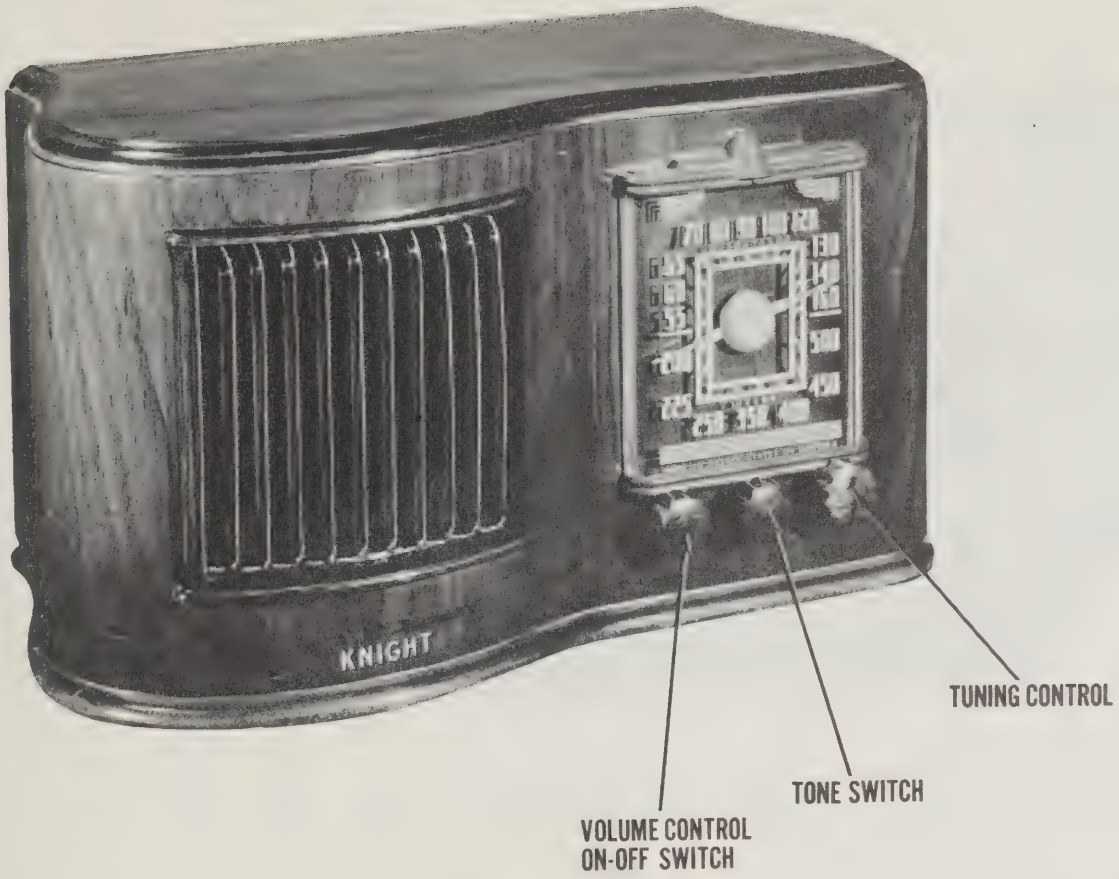
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1949

492-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

KNIGHT
MODEL 6D-235



KNIGHT
MODEL 6D-235

KNIGHT MODEL 6D-235

TRADE NAME	Knight, Model 6D-235
SUPPLIER	Allied Radio Corp., 833 West Jackson Blvd., Chicago 7, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (Six)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 12SK7 AF Amp., 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	535-1620KC RATING .22 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 12SA7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	100 MMF.	High side to ant. lead. Low side to B-.	1620KC	"	"	A5	Adjust for maximum output.
3		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-11 SET #54-FOLDER #11

PARTS LIST AND DESCRIPTIONS

KNIGHT MODEL 6D-235

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	AF Amp.	12SK7	12SK7	8N	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	N-3658	PRSA150/40-40	EDL4415	DSB-2x40-150	TA-440	Filter-Blue
B	40	150						" -Red
8	6	150	N-1367	PRS150/8	BR815	M-8-150	UT-81	1st AF Plate Decoup.
9	.05	400	N-1346	484-05	GT4S5	ST-4-05	TC-15	Rectifier Bypass
10	.08	200	N-4957	484-.1	GT4P1	ST-2-1	72P2	Line Isolation
11	.02	400	N-1376	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
12	.05	200	N-1345	484-05	GT2S5	ST-4-05	TC-15	Feedback
13	.01	400	N-1903	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
14	.003	600	N-2063	684-003	GT6D3	ST-6-003	TC-23	" "
15	.005	600	N-4894	684-005	GT6D5	ST-6-005	TC-25	" "
16	.1	200	N-1351	484-.1	GT2P1	ST-2-1	TC-1	Tone Compensation
17	.015	400	N-4927	484-015	GT6S15	ST-4-02	TC-12	AF Screen Bypass
18	.0005	600	N-4890	1468-0005	GT6T5	ST-6-0005	TC-35	1st AF Plate Bypass
19	.05	200	N-1345	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
20	100	500	N-1374	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
21	10	500		1469-00001	5R5T1	MOS.5-41	MS-41	Fixed Trimmer

CONTROLS

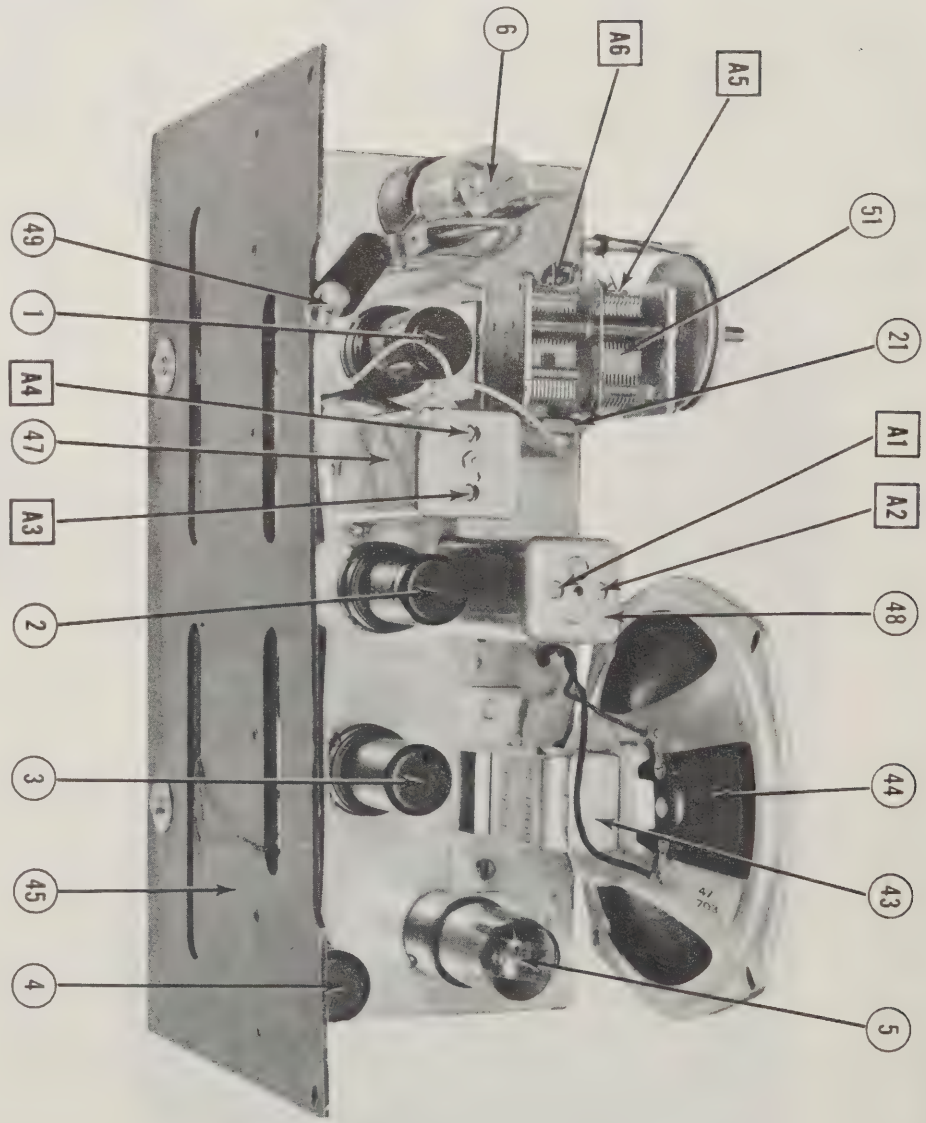
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	500KΩ	½	N-4843	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
23	22KΩ	½	N-4025	BTS-22K	Red-Red-Or. Osc. Grid
24	3.3 Meg.	½	N-4062	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
25	47KΩ	½	N-4063	BTS-47K	Yl.-Vi.-Or. Diode Filter
26	4.7 Meg.	½	N-4061	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
27	10KΩ	½	N-4895	BTS-10K	Br.-Blk.-Or. 1st AF Plate Load
28	100KΩ	½	N-1778	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Decoup.
29	4.7 Meg.	½	N-4061	BTS-4.7 Meg.	Yl.-Vi.-Grn. 2nd AF Grid
30	1.2 Meg.	½	N-4470	BTS-1.2 Meg.	Br.-Red-Grn. 2nd AF Screen
31	2200Ω	½	N-4896	BTS-2200	Red-Red-Red 2nd AF Cathode
32	220KΩ	½	N-4899	BTS-220K	Red-Red-Yl. 2nd AF Plate Load
33	22KΩ	½	N-5029	BTS-22K	Red-Red-Or. Tone Comp.
34	8200Ω	½	N-4897	BTS-8200	Gray-Red-Red " "
35	470KΩ	½	N-4027	BTS-470K	Yl.-Vi.-Yl. Output Grid
36	180Ω	½	N-4067	BW-½-180	Br.-Gray-Br. Output Cathode
37	22KΩ	½	N-5029	BTS-22K	Red-Red-Or. Feedback-See Note
38	1200Ω	1	N-4900	BTA-1200	Br.-Red-Red Filter
39	33Ω	1	N-4068	BW-1-33	Or.-Or.-Blk. Surge Limiter
40	33Ω	1	N-4068	BW-1-33	Or.-Or.-Blk. Line Dropping
41	220KΩ	½	N-4899	BTS-220K	Red-Red-Yl. Line Isolation

Note-Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
42	2650Ω	3.2Ω	205Ω tapped @ 7Ω	.55Ω	N-4875	A-3330		A-3031	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			KNIGHT PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.				
43	PM	3.2Ω	N-4869	ST-108† Mod. P6-X	6A15†	†Fabricate new mounting bracket.
	CONE DIA.	VC DIA.				
44	5-3/4"	9/16"				

R F COILS

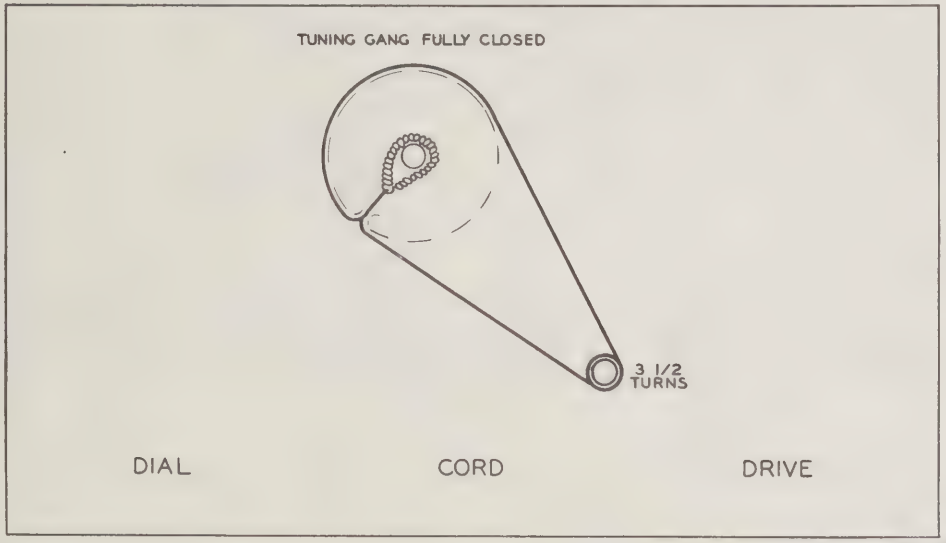
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	KNIGHT PART No.	MEISSNER PART No.	
45	Loop Ant.	.1Ω	1.5Ω			
46	Osc. Coil	.8Ω	6.4Ω	N-4810	14-1060*	*Add 50 MMF from high side tuning cap. to osc. grid.
47	Input IF	12.5Ω	14.8Ω	N-4872	16-5712	
48	Output IF	22Ω	22Ω	N-4873	16-5714	

DIAL LIGHT

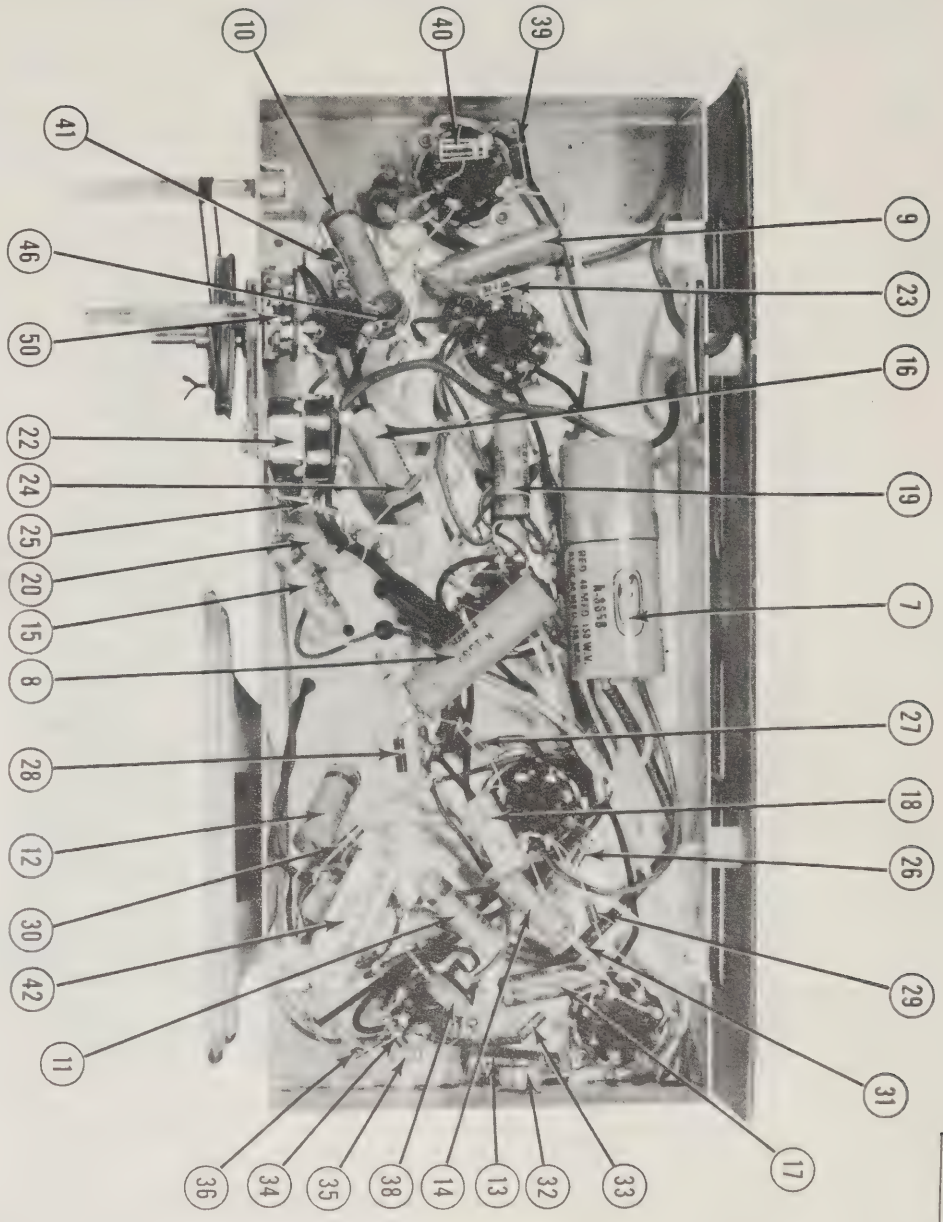
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					KNIGHT PART No.		
49	Bayonet	6-8	0.15	Brown			Type #47

MISCELLANEOUS

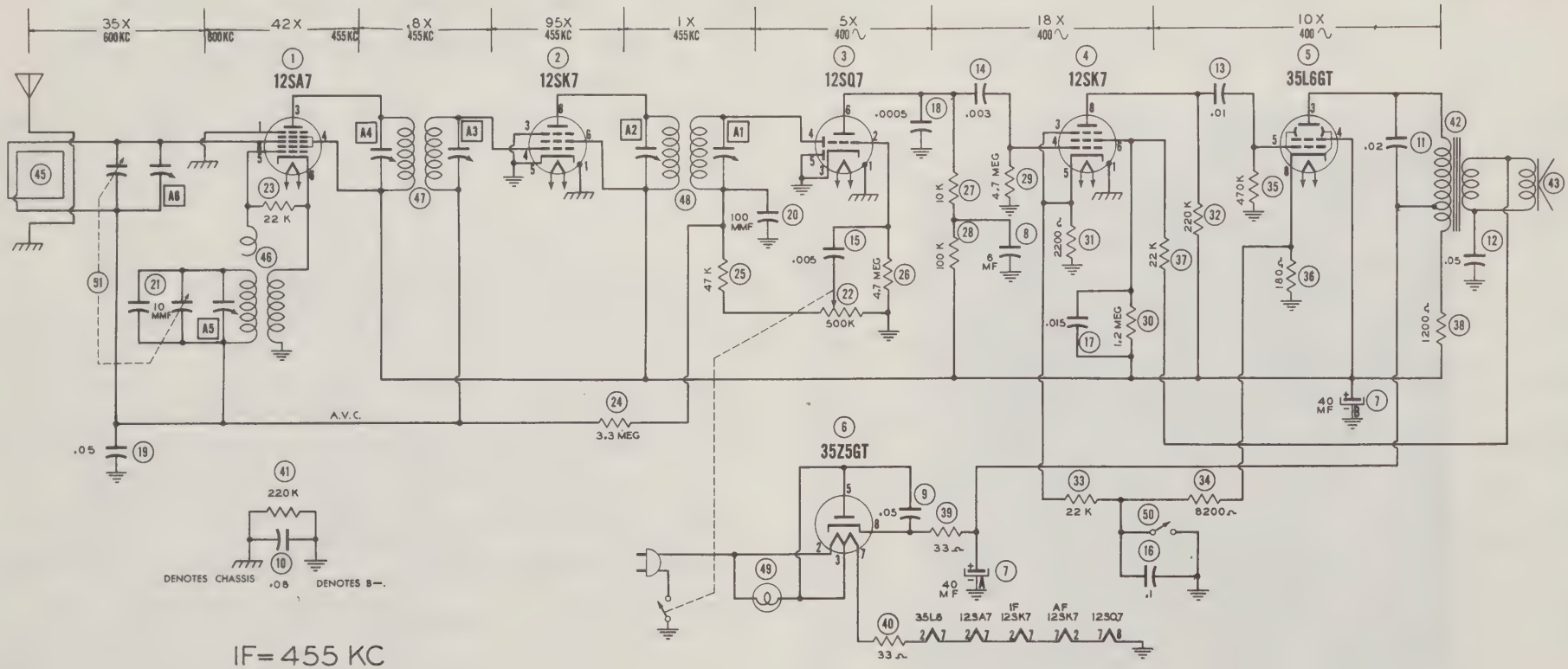
ITEM No.	PART NAME	KNIGHT PART No.	NOTES
50	Switch	N-4634	Tone
51	2 Gang Var.Cap.	N-4884	(27-427MMF, 34-197MMF)



CHASSIS—BOTTOM VIEW



KNIGHT MODEL 6D-235



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	50VAC	85VDC	85VDC	-8.4VDC§	0V.	38VAC	-.2VDC
2	12SK7	0V.	38VAC	0V.	-.2VDC	0V.	85VDC	25VAC	85VDC
3	12SQ7	0V.	-.4VDC	0V.	0V.	-.2VDC	60VDC	12VAC	0V.
4	12SK7	0V.	12VAC	1VDC	0V.	1VDC	11VDC	25VAC	30VDC
5	35L6GT	0V.	85VAC	103VDC	85VDC	0V.	4.2VDC	50VAC	5.6VDC
6	35Z5GT	0V.	117VAC	112VAC	85VAC	112VAC	118VDC	90VAC	120VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	220KΩ	54Ω	100KΩ	100KΩ	22KΩ	.8Ω	40Ω	3.9 Meg.
2	12SK7	220KΩ	40Ω	0Ω	3.9 Meg.	0Ω	100KΩ	27Ω	100KΩ
3	12SQ7	220KΩ	4.7 Meg.	0Ω	0Ω	550KΩ	210KΩ	13Ω	0Ω
4	12SK7	220KΩ	13Ω	2.2KΩ	4.7 Meg.	2.2KΩ	1.2 Meg.	27Ω	320KΩ
5	35L6GT	INF.	90Ω	100KΩ	100KΩ	470KΩ	8.2KΩ	54Ω	180Ω
6	35Z5GT	INF.	150Ω	148Ω	85Ω	148Ω	100KΩ	120Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

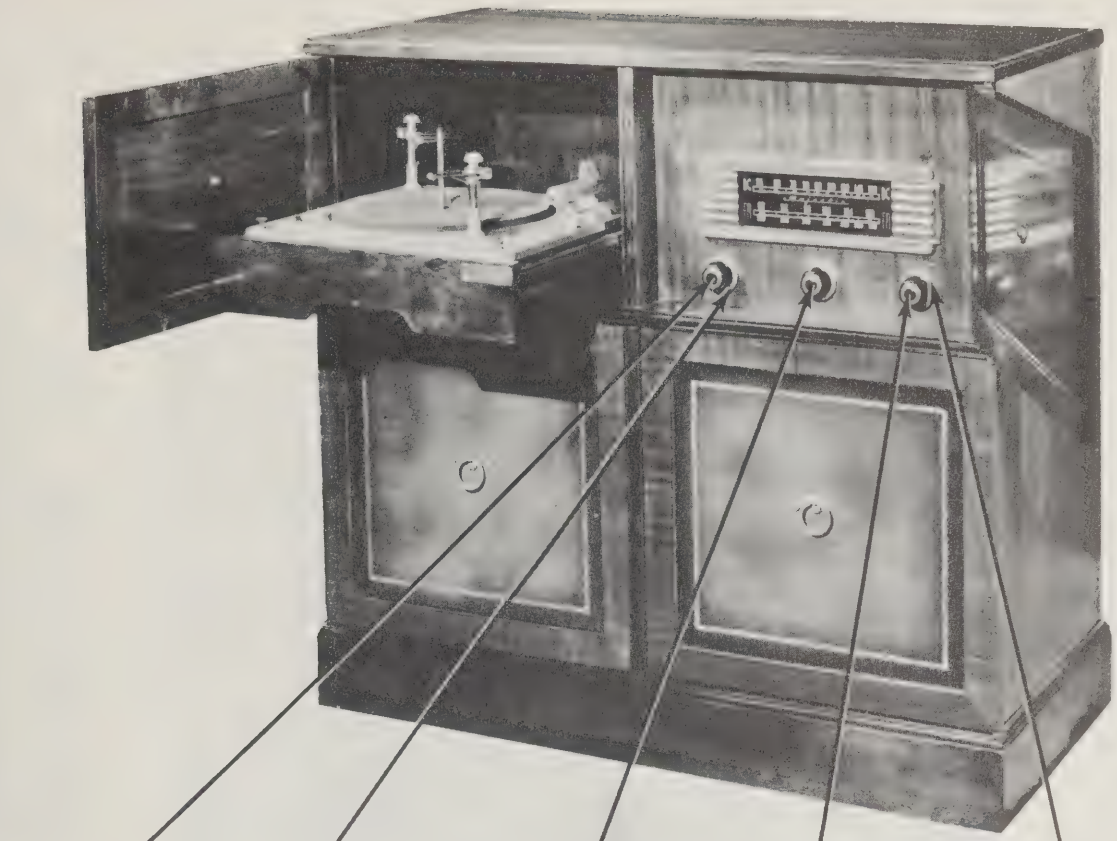
© Howard W. Sams & Co., Inc. 1949

492-11

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MAJESTIC MODEL
8FM889 (Ch. 8C07D)



MAJESTIC MODEL
8FM889 (Ch. 8C07D)

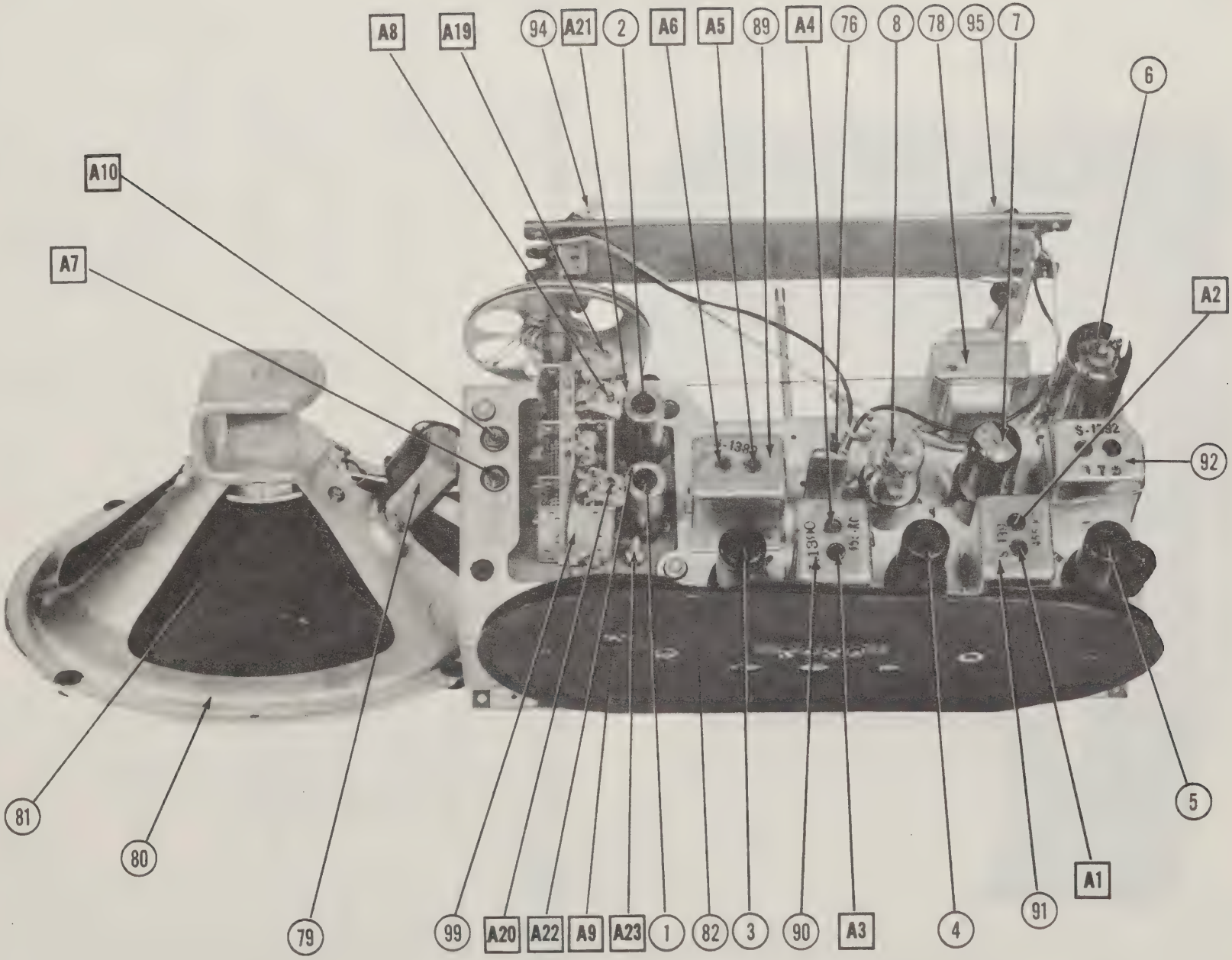
MAJESTIC MODEL 8FM889

TRADE	Majestic, Model 8FM889 (Ch. 8C07D)
MANUFACTURER	Majestic Radio & Tele. Corp., Elgin, Ill.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (EIGHT)	Types, 6BA6 RF Amp., 6BE6 Converter, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6SH7 FM Limiter, 6S8GT Det.-AVC-AF, 25L6GT Power Output, 25Z6GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .45 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1630KC — FREQ. MOD. 87.5-109MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-12 SET #54-FOLDER #12


A8
A19
94
A21
2
A6
A5
89
A4
76
8
78
95
7
6
A10
A7
A2
92
5
81
80
79
99
A20
A22
A9
A23
1
82
3
90
A3
4
91
A1

MAJESTIC MODEL
8FM889 (Ch. 8CO7D) **PAGE 3**

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	1st IF Amp.	6SG7	6SG7	8BK	
4	2nd IF Amp.	6SG7	6SG7	8BK	
5	FM Limiter	6SH7	6SH7	8BK	
6	Det.-AVC-AF	6S8GT	6S8GT	8CB	
7	Power Output	25L6GT	25L6GT	7AC	
8	Rectifier	25Z6GT	25Z6GT	7G	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	100	150	19-37		EZ532150*	DSB-804020-	D12878	Filter-Red
B	20	150			BRH1225	150†		" -Blue
C	200	150				M-250-12		Cathode Bypass-Yellow
10	20	150	19-32	PRS150-20	BR2015	M-20-150	UT-201	Filter
11	.05	400	016-8	484-05	GT4S5	ST-4-05	TC-15	Line Filter
12	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	Output Plate Bypass
13	.01	400	016-5	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
14	.002	600	017-2	684-002	GT6D2	ST-6-002	TC-22	" "
15	.005	600	017-4	684-005	GT6D5	ST-6-005	TC-25	" "
16	.005	600	017-4	684-005	GT6D5	ST-6-005	TC-25	Tone Compensation
17	.01	400	015-5	484-01	GT4S1	ST-4-01	TC-11	" "
18	.01	400	015-5	484-01	GT4S1	ST-4-01	TC-11	Isolation
19	.01	400	016-5	484-01	GT4S1	ST-4-01	TC-11	Limiter Plate Decoup.
20	.01	400	016-5	484-01	GT4S1	ST-4-01	TC-11	RF Bypass Power Supply
21	.01	400	015-5	484-01	GT4S1	ST-4-01	TC-11	2nd IF Cath. Bypass
22	.01	400	016-5	484-01	GT4S1	ST-4-01	TC-11	RF Bypass Power Supply
23	.01	400	016-5	484-01	GT4S1	ST-4-01	TC-11	" " " "
24	.01	400	015-5	484-01	GT4S1	ST-4-01	TC-11	AVC Filter
25	.01	400	015-5	484-01	GT4S1	ST-4-01	TC-11	" "
26	.05	600	015-8	684-05	GT6S5	ST-6-05	TC-15	" "
27	.05	600	015-8	684-05	GT6S5	ST-6-05	TC-15	Ext. Ant. & Phono Iso.
28	.05	600	015-8	684-05	GT6S5	ST-6-05	TC-15	" " " " " "
								See Note
29	220	500	020-53	1468-0002	5W5T2	MO.5-32	1FM-32	RF Byp. Power Supply
30	220	500	020-53	1468-0002	5W5T2	MO.5-32	1FM-32	AF Plate Bypass
31	100	500	020-39	1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass
32	5000	300	6-259	1467-005	1D5D5	MW.5-25	1FM-25	Limiter Screen Bypass
33	100	500	020-39	1468-0001	5W5T1	MO.5-31	1FM-31	Limiter Grid Filter
34	220	500	020-53	1468-0002	5W5T2	MO.5-32	1FM-32	Diode Filter
35	220	500	020-53	1468-0002	5W5T2	MO.5-32	1FM-32	" "
36	5000	300	6-259	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Screen Bypass
37	5000	300	6-259	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Screen Bypass
38	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	Conv. Screen Bypass
39	47	500	6-159	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.
40	1000	500	6-218	1469-001	2R5D1	MWS.5-21	MS-21	Fixed Padder
41	50	300	6-159	1468-00005	5W5Q5	MO.5-45	1FM-45	RF Coupling
42	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	RF Screen Bypass
43	47	500	6-159	1468-00005	5W5Q5	MO.5-45	1FM-45	RF Cathode Bypass
44	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	Filament Bypass
45	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	"
46	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	" "
47	5000	300	6-259	1467-005	1D5D5	MW.5-25	1FM-25	" "
48	5000	300	6-259	1467-005	1D5D5	MW.5-25	1FM-25	" "
49	5000	300	6-259	1467-005	1D5D5	MW.5-25	1FM-25	" "
50	100	500	020-39	1468-0001	5W5T1	MO.5-31	1FM-31	Diode Filter-See Note

Note-Not used in all models. *Omit bypass section and parallel 50 & 30 MFD sections.
†Parallel sections to obtain desired capacity.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: MEISSNER PART No.
82	AM Loop Ant.	.2Ω	1.2Ω	S1400	
83	FM Dipole Ant.		0Ω		
84	FM Ant.Coil	0Ω	0Ω	S1407	
85	Wave Trap		18Ω	S1410	
86	FM RF Coil		0Ω	S1408	
87	AM Osc.Coil		4Ω	S1411	14-1060
88	FM " "		0Ω	S1409	
89A	AM 1st IF	6.5Ω	6.5Ω	S1389	
B	FM " "	.2Ω	.2Ω		
90A	AM 2nd IF	6.5Ω	6.5Ω	S1390	
B	FM " "	.2Ω	.2Ω		
91A	AM 3rd IF	6.5Ω	6.5Ω	S1391	
B	FM " "	.2Ω	.2Ω		
92	Disc. Trans.	.2Ω	.2Ω	S1392	
93	RF Plate Choke		1Ω	S1384	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA	INSTALLATION NOTES
94	Bayonet	6-8	0.15	Brown	26-2		Types #47
95	"	"	"	"	"		" "

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
96		L-71	L-71 Original

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
97A	Shaft	11-71	Band Switch
B	Wafer Sect. 1	11-71-1	" "
C	" " 2	11-71-2	" "
D	" " 3	11-71-3	" "
98	Switch	11-72	Radio-Phono
99	Tuning Gang	7-25	AM (17-500MMF, 17-500MMF)
A7	Trimmer	8-63	Wave Trap Adj.
A8	"	8-35	BC Osc. Adj.
A9	"	8-59	BC Ant. Adj.
A10	Padder	8-65	BC Osc. Adj.
A19	Trimmer	8-38	FM Osc. Adj.
A20	"	8-35	FM Ant. Adj.
	Dial Scale	117-106	Glass
	Dial Pointer	135-21R	
	Cabinet	115-55-1	State Color (Mahogany or Blond)
	Knob	128-91	Volume
	"	128-92	Tuning
	"	128-93	Phono-Radio
	"	128-94	On-Off/Tone
	"	128-95	Band Switch

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	
51A	500KΩ	½	13-132	*		Volume Control tapped @ 100KΩ
B	2 Meg.	½				Tone Control & Sw.‡

‡This is a dual control with concentric shafts.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	
52	68Ω	½	01-37		Blue-Gray-Blk. RF Cathode
53	3300Ω	½	02-108	BTS-3300	Or.-Or.-Red RF Plate
54	10Ω	½	01-3		Br.-Blk.-Blk. Parasitic Suppressor
55	47KΩ	½	01-157	BTS-47K	Yl.-Vi.-Or. Conv. Grid
56	2200Ω	½	01-101	BTS-2200	Red-Red-Red Screen Dropping
57	22KΩ	½	01-143	BTS-22K	Red-Red-Or. Osc. Grid
58	470KΩ	½	01-199	BTS-470K	Yl.-Vi.-Yl. AVC Network
59	470KΩ	½	01-199	BTS-470K	Yl.-Vi.-Yl. " "
60	2.2 Meg.	½	01-227	BTS-2.2 Meg	Red-Red-Grn. " "
61	6dΩ	½	01-37		Blue-Gray-Blk. 2nd IF Cathode
62	22KΩ	½	01-143	BTS-22K	Red-Red-Or. Diode Filter
63	470KΩ	½	01-199	BTS-470K	Yl.-Vi.-Yl. Diode Load
64	47KΩ	½	01-157	BTS-47K	Yl.-Vi.-Or. Limiter Grid
65	12KΩ	½	02-132	BTS-12K	Br.-Red-Or. Limiter Screen Dropping
66	3300Ω	½	02-108	BTS-3300	Or.-Or.-Red Limiter Screen Bleeder
67	47KΩ	½	01-157	BTS-47K	Yl.-Vi.-Or. Limiter Plate Decoupling
68	470KΩ	½	01-199	BTS-470K	Yl.-Vi.-Yl. Series Test Socket
69	12KΩ	½	01-132	BTS-12K	Br.-Red-Or. Tone Comp.
70	4.7 Meg.	½		BTS-4.7 Meg	Yl.-Vi.-Grn. AF Grid
71	470KΩ	½	01-199	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
72	470KΩ	½	01-199	BTS-470K	Yl.-Vi.-Yl. Output Grid
73	150Ω	½	02-52	BW-½-150	Br.-Grn.-Br. Output Cathode
74	100Ω	½	01-45	BW-½-100	Br.-Blk.-Br. Filter
75	27Ω	½	02-20		Red-Vi.-Blk. Surge Limiter
76A	50Ω	10	9-332	ABA-100	Line Dropping
B	50Ω	10			" "
77	2.2 Meg.	½	01-227	BTS-2.2 Meg	Red-Red-Grn. Series Phono

FILTER CHOKE

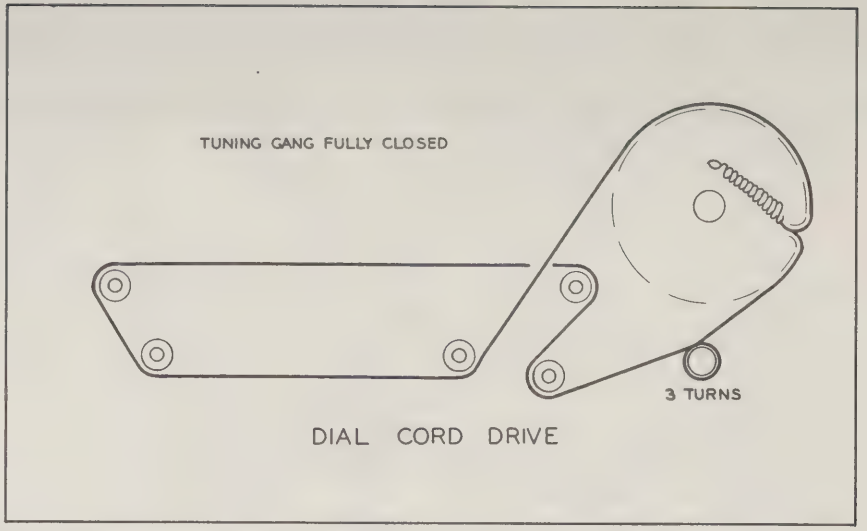
ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ∿	MAJESTIC PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
78	.056A.	100Ω	3.4 Henries	2-32	C-1080	T20C53§	C-2977	§Drill one new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAJESTIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
79	2200Ω	3.7Ω	220Ω	.6Ω	Part of 22-62	A-3849	T22S37	A-2902	

SPEAKER

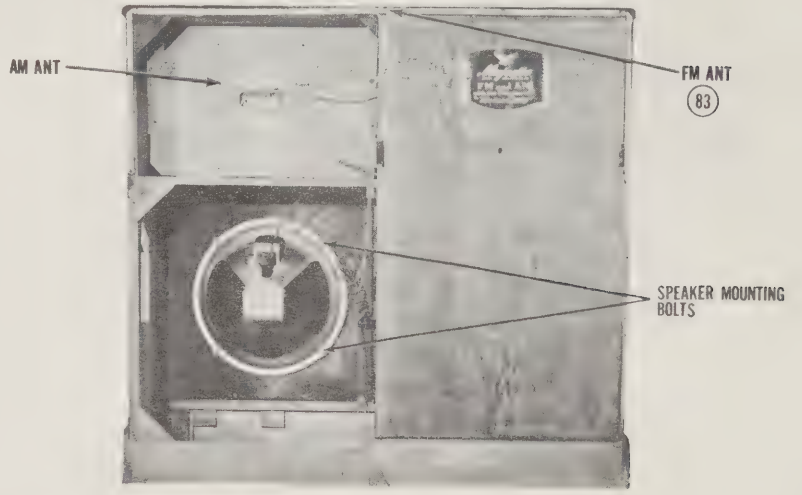
ITEM No.	RATINGS		REPLACEMENT DATA				INSTALLATION NOTES
	FIELD	VC IMP.	MAJESTIC PART No.	JENSEN PART No.	QUAM PART No.		
80	PM	3.7"	22-62	ST-102‡ Mod. P12-S	12A4‡		‡Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	VC DIA.					
81	11-3/4"	1"					



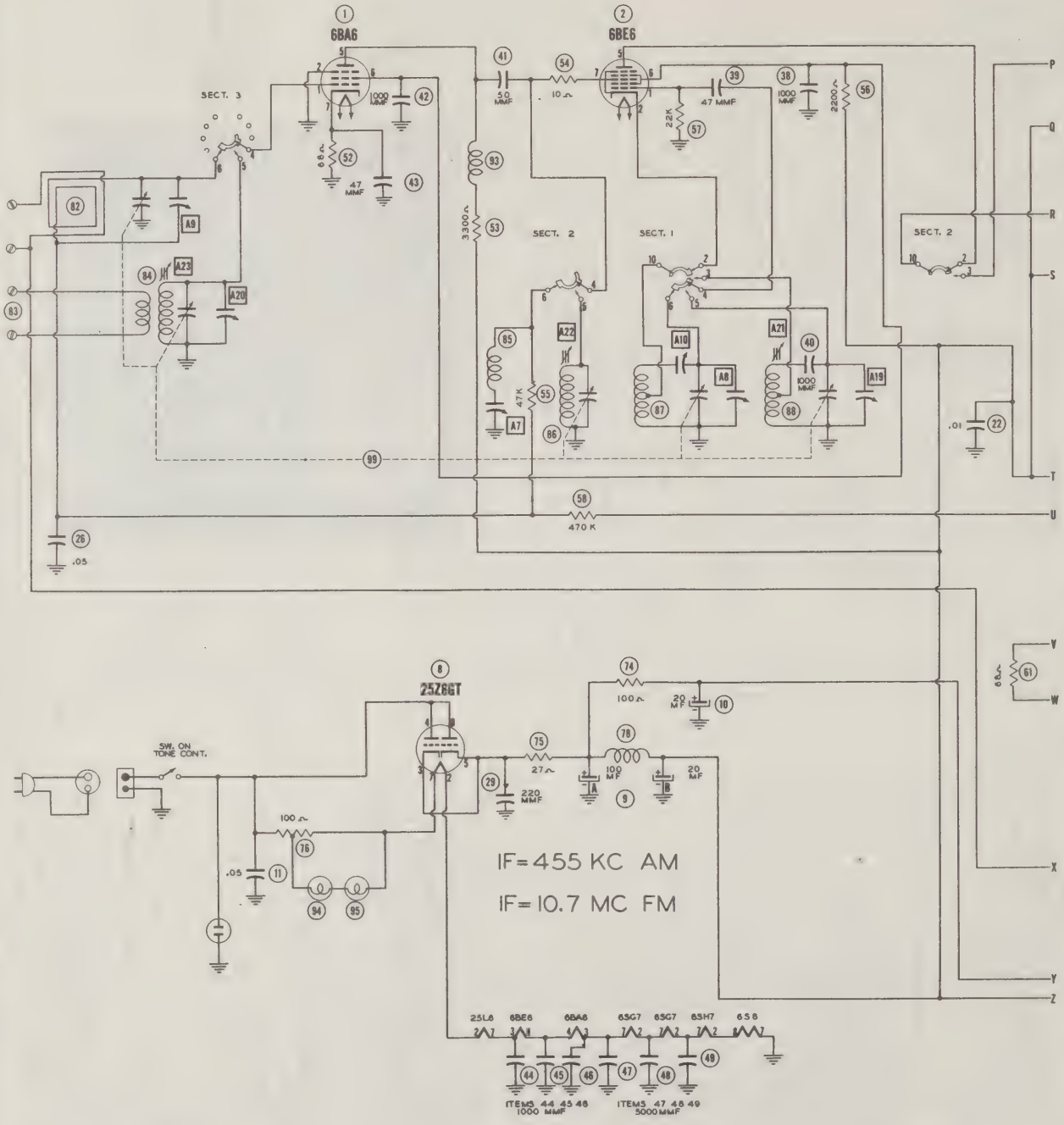
DIAL CORD DRIVE

DISASSEMBLY INSTRUCTIONS

1. Remove four Phillips head screws holding back cover and power plug.
2. Disconnect phono motor plug and remove phono pick-up plug and speaker plug from rear of chassis. Remove FM antenna leads.
3. Remove four 11/32" hex nuts holding speaker. Remove speaker.
4. Remove five push-on control knobs.
5. Remove four 1/4" hex head metal type screws from bottom of chassis. Remove chassis.



DATE 1/49-#492-12 SET #54-FOLDER #12

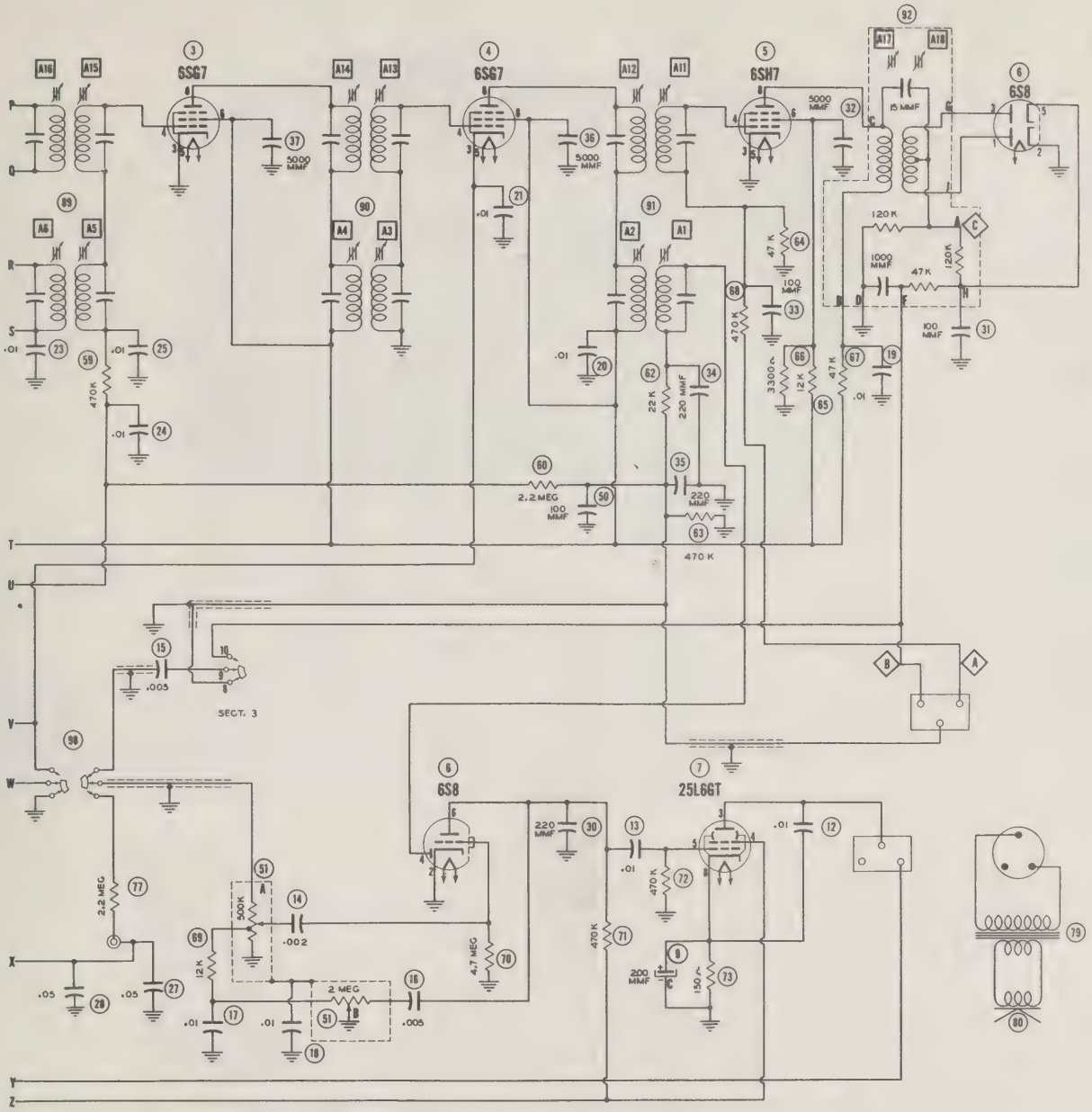


STAGE GAIN MEASUREMENTS

ANTENNA TO RF GRID	12X	600KC	INTER. IF TRANS.	.6X	455KC
RF GRID TO CONV. GRID	2X	600KC	2nd IF TUBE	80X	455KC
CONVERSION GAIN	3X	IN 600KC OUT 455KC	OUTPUT IF TRANS.	.6X	455KC
INPUT IF TRANS.	.4X	455KC	AUDIO	35X	400 ∿
1st IF TUBE	40X	455KC	AUDIO	15X	400 ∿

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

©Howard W. Sams & Co., Inc. 1949



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.2VDC	0V.	28VAC	35VAC	100VDC	95VDC	.6VDC	-
2A	6BE6	-6.4VDC§	0V.	42VAC	35VAC	115VDC	95VDC	-.1VDC	-
‡2B	6BE6	-5VDC§	0V.	42VAC	35VAC	115VDC	90VDC	0V.	-
3	6BG7	0V.	21VAC	0V.	-.6VDC	0V.	115VDC	28VAC	115VDC
4	6BG7	0V.	14VAC	1VDC	0V.	1VDC	115VDC	21VAC	115VDC
‡5	6SH7	0V.	6.9VAC	0V.	-.4VDC	0V.	20VDC	14VAC	75VDC
6	6B8GT	-.4VDC	0V.	-.4VDC	-1.3VDC	-.1VDC	56VDC	0V.	6.9VAC
7	25L6GT	0V.	65VAC	105VDC	115VDC	0V.	115VDC	42VAC	7.8VDC
8	25Z6GT	0V.	65VAC	117VAC	115VDC	117VAC	125VDC	95VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	4 Meg.	0Ω	14Ω	16Ω	19KΩ	18KΩ	75Ω	-
2A	6BE6	22KΩ	.5Ω	22Ω	19Ω	16KΩ	18KΩ	4 Meg.	-
‡2B	6BE6	22KΩ	0Ω	22Ω	19Ω	15KΩ	18KΩ	11Ω	-
3	6BG7	0Ω	11Ω	0Ω	4 Meg.	0Ω	15KΩ	14Ω	.6KΩ
4	6BG7	0Ω	7Ω	68Ω	7Ω	75Ω	15KΩ	11Ω	16KΩ
‡5	6SH7	0Ω	3Ω	0Ω	50KΩ	0Ω	3.3KΩ	7Ω	65KΩ
6	6B8GT	120KΩ	0Ω	120KΩ	520KΩ	240Ω	440KΩ	0Ω	3Ω
7	25L6GT	0Ω	32Ω	16KΩ	16KΩ	470KΩ	16KΩ	22Ω	150Ω
8	25Z6GT	INF.	32Ω	100Ω	16KΩ	100Ω	16KΩ	44Ω	16KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

©Howard W. Sams & Co., Inc. 1949

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cap. fully closed and set pointer 2½" from upper left hand edge of dial backplate. This is the calibration mark referred to in Steps below.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to rear AM stator of tuning cap. Low side to chassis.	455KC	AM (Counter-clock-wise)	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4, A5,A6	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.05 MFD	"	"	"	"	"	A7	Adjust for minimum output
3		Loop	1500KC	"	5-11/32" from calibration mark	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. out.
4		"	"	"	Tune for maximum output.	"	A9	Adjust for maximum output
5		"	600KC	"	"	"	A10	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and ± 300KC deviation. Connect synchronized sweep voltage from sig. gen. to scope horizontal input. If sig. gen. does not have provision for this the synchronization voltage may be taken from the power line. Some phase shift may be encountered resulting in a double trace pattern, If scope or sig. gen. has a phase control rotate it until a single trace pattern is obtained. If this control is not available or synchronization voltage is taken from power line, the same thing may be accomplished by connecting a cap. of suitable value (.01 to .1 MFD) in series with the synchronization input.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6	.05 MFD	High side to Pin 4 (grid) of 6SG7 2nd IF Tube (4). Low side to chassis.	10.7MC (Freq. Mod.)	FM (Clock-wise)	Tuning cap. fully closed	Vertical input to Point Ⓐ. Ground to chassis.	A11,A12	Adjust for maximum amplitude and symmetry of pattern per Fig. 1.
7	.05 MFD	High side to Pin 4 (grid) of 6SG7 1st IF Tube (3). Low side to chassis.	"	"	"	"	A13, A14	"
8	.05 MFD	High side to junction of FM RF Coil (86) and resistor (54). Low side to chassis.	"	"	"	"	A15, A16	"
9	.05 MFD	"	"	"	"	Vertical input to Point Ⓑ. Ground to chassis.	A17, A18	Alternately adjust A17 for maximum amplitude and straightness of diagonal portion of curve and A18 for symmetry and centering of curve per Fig. 2. Continue with FM RF Alignment, Step 11.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	.05 MFD	High side to Pin 4 (grid) of 6SH7. Low side to chassis.	10.7MC (Unmodu-lated)	FM (Clock-wise)	Tuning cap. fully closed	DC probe to Point Ⓐ. Common to chassis	A17	Adjust for maximum deflection.
7	.05 MFD	"	"	"	"	DC probe to Point Ⓑ. Common to chassis	A18	Use a zero center scale VTVM if available. Adjust for zero deflection.
8	.05 MFD	High side to Pin 4 (grid) of 6SG7. 2nd IF Tube (4). Low side to chassis.	"	"	"	DC probe to Point Ⓐ. Common to chassis	A11, A12	Adjust for maximum deflection.
9	.05 MFD	High side to Pin 4 (grid) of 6SG7. 1st IF Tube (3). Low side to chassis.	"	"	"	"	A13, A14	"
10	.05 MFD	High side to junction of FM RF Coil (86) & resistor (54). Low side to chassis.	"	"	"	"	A15, A16	"

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11	300Ω carbon res.	High side to one FM dipole terminal in series with 300Ω. Low side to other dipole terminal.	106MC (Unmodu-lated)	FM (Clock-wise)	5-6/8" from calibration mark.	DC probe to Point Ⓐ. Common to chassis	A19	Adjust for maximum deflection.
12	"	"	"	"	Tune for maximum deflection.	"	A20	"
13	"	"	88MC (Unmodu-lated)	"	3/8" from calibration mark.	"	A21	"
14	"	"	"	"	"	"	A22, A23	Adjust for maximum deflection. Repeat Steps 11, 12, 13 and 14 until no further improvement can be made.

FIG. 1

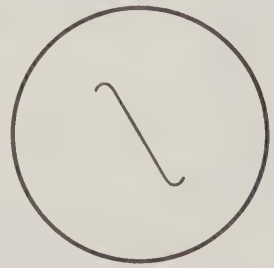
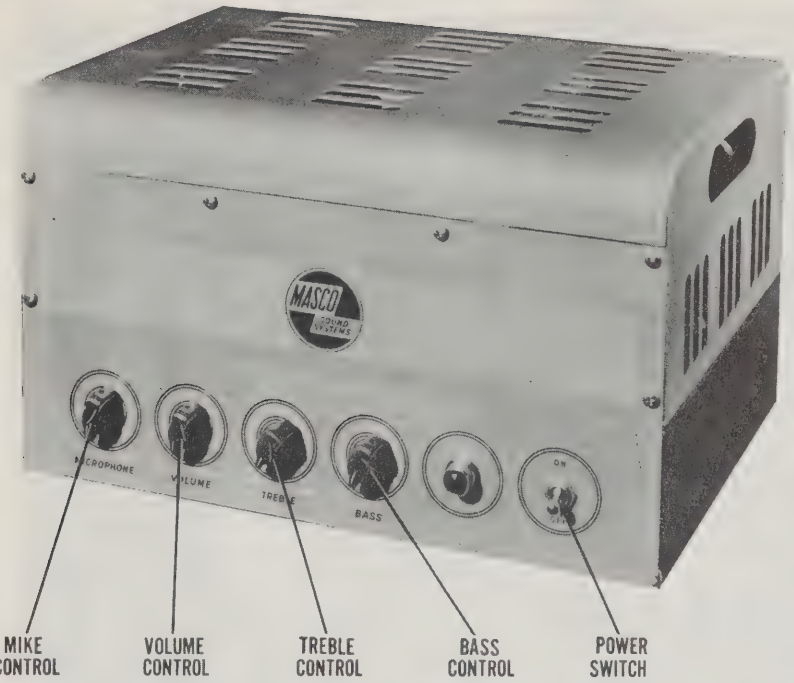


FIG. 2

MASCO
MODEL MA-25HF



MASCO MODEL MA-25HF

TRADE NAME	Masco, Model MA-25HF
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City, N.Y.
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES (SEVEN)	Types, 12SJ7 Mic. Pre-Amp., 12SC7 Phono Pre-Amp., 6SL7GT Mixer-Amp., 6SL7GT Phase Inv., (2) 6L6G Power Output, 5V4G Rectifier.
POWER SUPPLY	105-125 Volts AC RATING 1.0 Amp. @ 117 Volts AC

SPEAKERS

1. (a) This amplifier is designed for use with PM speakers or PM re-entrant horns only. If electro-dynamic speakers are to be used a separate exciter supply must be employed.

   (b) Determine the number of speakers required and select the desired types. Make sure that the sum of the power ratings of the speakers selected is approximately equal to the rated output of the amplifier, namely 35 watts. For example: If the speakers are rated at 5 watts each, 7 speakers are required for a 35 watt amplifier.

2. (a) Connect the speakers or speaker lines to the output sockets through the use of one or two six-prong plugs. Pins #2 & #5 of the plugs should be used for the connections. Note that both output sockets are internally connected in parallel.

   (b) For running voice coil cables use wire #18 or heavier, twisted or parallel. For cable lengths exceeding 75 feet use the "line" impedance taps and employ "line" matching transformers on the speakers.

3. Select the proper output impedance by rotating the impedance selector until the desired impedance tap is visible through the small opening in the selector.

   DO NOT ROTATE THE SELECTOR WHILE THE AMPLIFIER IS OPERATING.

   The proper impedance tap to be used is determined by the impedance of the speakers, the number of speakers or lines and method of connection. The tap setting for speakers (or lines) of the same impedance connected in parallel is equal to the impedance of one speaker or line divided by the total number of such speakers (or lines). Thus two 15 ohm trumpet speakers in parallel should be connected to 15/2 = 7½ ohms (use 8 ohm setting). Similarly two 500 ohm lines in parallel are connected to 250 ohms. In series operation of equal impedances the net impedance is equal to the impedance of one speaker or line times the total number. Thus four 4 ohm speakers in series equal 16 ohms (use 15 ohm tap).

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

MASCO MODEL MA-25HR

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. Pre-Amp.	12SJ7	12SJ7	8N	
2	Phono Pre-Amp.	12SC7	12SC7	8S	
3	Mixer-Amp.	6SL7GT	6SL7GT	8BD	
4	Phase Inv.	6SL7GT	6SL7GT	8BD	
5	Power Output	6L6G	6L6G	7AC	
6	" "	6L6G	6L6G	7AC	
7	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	10	450		AF2222J#	UP111145#	DY-4x10-450#	EL-410#	▲ Filter
B	10	450						"
C	10	450						■ "
D	10	450						■ "
9A	10	450		AF2222J	UP111145	DY-4x10-450	EL-410	▲ Decoupling
B	10	450						■ "
C	10	450						▲ "
D	10	450						■ "
10	50	50		PRS50/50	BR505	M-50-50	TA-550	Cathode Bypass
11	50	50		PRS50/50	BR505	M-50-50	TA-550	" "
12	.1	600		630-.1	DA-6011	XDMR6-.1	BP-16	Line Filter-See Note
13	.1	600		684-.1	GT6P1	ST-6-1	TC-1	Audio Coupling
14	.1	600		684-.1	GT6P1	ST-6-1	TC-1	" "
15	.1	600		684-.1	GT6P1	ST-6-1	TC-1	" "
16	.1	600		684-.1	GT6P1	ST-6-1	TC-1	" "
17	.005	600		684-.005	GT6D5	ST-6-005	TC-25	Tone Compensation
18	.05	200		484-05	GT2S5	ST-4-05	TC-15	" "
19	.005	600		684-005	GT6D5	ST-6-005	TC-25	" "
20	.001	600		684-001	GT6D1	ST-6-001	TC-21	" "
21	.01	600		684-01	GT6S1	ST-6-01	TC-11	" "
22	.01	600		684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
23	.005	600		684-005	GT6D5	ST-6-005	TC-25	" "
24	.1	600		684-.1	GT6P1	ST-6-1	TC-1	Mic. Amp. Screen Byp.
25	.01	600		684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
26	.01	600		684-01	GT6S1	ST-6-01	TC-11	" "
27	.05	600		684-05	GT6S5	ST-6-05	TC-15	" "
28	.1	600		684-.1	GT6P1	ST-6-1	TC-1	Pre-Amp. Plate Decoup.
29	.1	600		684-.1	GT6P1	ST-6-1	TC-1	" " "
30	500	500		1468-0005	5W5T5	MO.5-35	1FM-35	Tone Compensation
31	500	500		1468-0005	5W5T5	MO.5-35		" "

Note-Not used in all models.
#Parallel sections to obtain desired capacity.

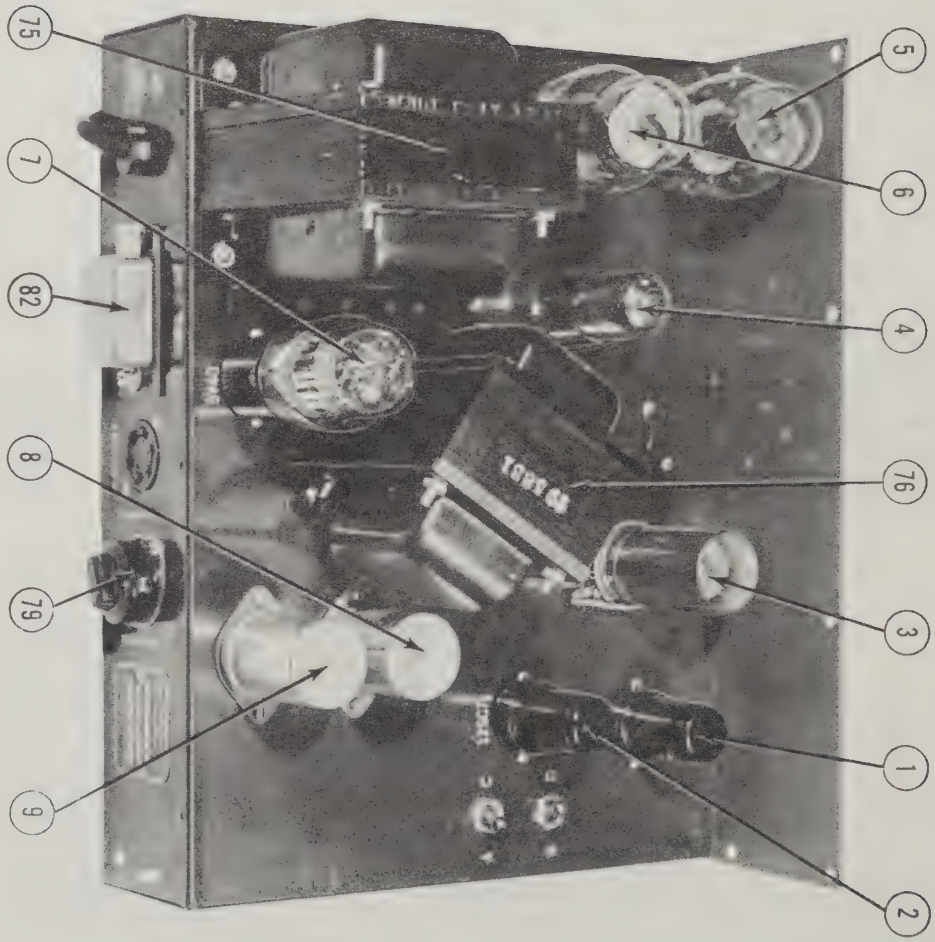
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
32A	1 Meg.	½		DVC-539X		Radio-Phono Volume Control
B	Shaft			A		Attach to 32A per instructions
33A	500KΩ	½		D13-133	M-60-Z	Mike Control
B	Shaft			A	Not Req.	Attach to 33A per instructions
34A	500KΩ	½		D13-133	M-60-Z	Treble Control
B	Shaft			A	Not Req.	Attach to 34A per instructions
35A	500KΩ	½		D13-133	M-60-Z	Bass Control
B	Shaft			A	Not Req.	Attach to 35A per instructions
36	50Ω	1		W-50	43-50	Hum Bal. Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
37	5.6 Meg.	½		BTS-5.6 Meg.	Grn.-Blue-Grn. Mic. Amp. Grid
38	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Mic. Amp. Screen
39	270KΩ	½		BTS-270K	Red-Vi.-Yl. Mic. Amp. Plate Load
40	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Bleeder

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
41	270KΩ	½		BTS-270K	Red-Vi.-Yl. Isolation
42	270KΩ	½		BTS-270K	Red-Vi.-Yl. "
43	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn. 1st Phono Amp. Grid
44	10KΩ	½		BTS-10K	Br.-Blk.-Or. 1st Phono Amp. Plate Load
45	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn. 2nd Phono Amp. Grid
46	10KΩ	½		BTS-10K	Br.-Blk.-Or. 2nd Phono Amp. Plate Load
47	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
48	100KΩ	½		BTS-100K	Br.-Blk.-Yl. "
49	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
50	27KΩ	½		BTS-27K	Red-Vi.-Or. " "
51	4700Ω	½		BTS-4700	Yl.-Vi.-Red " "
52	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Voltage Dropping
53	1500Ω	½		BTS-1500	Br.-Grn.-Red Mixer Cathode
54	27KΩ	½		BTS-27K	Red-Vi.-Or. Mixer Plate Load
55	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Tone Comp.
56	10KΩ	½		BTS-10K	Br.-Blk.-Or. " "
57	27KΩ	½		BTS-27K	Red-Vi.-Or. Decoupling
58	1500Ω	½		BTS-1500	Br.-Grn.-Red 1st AF Cathode
59	47KΩ	½		BTS-47K	Yl.-Vi.-Or. 1st AF Plate Load
60	27KΩ	½		BTS-27K	Red-Vi.-Or. Decoupling
61	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Grid
62	1000Ω	½		BTS-1000	Br.-Blk.-Red 2nd AF Cathode
63	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load
64	6800Ω	½		BTS-6800	Blue-Gray-Red Phase Inv. Grid
65	1000Ω	½		BTS-1000	Br.-Blk.-Red Phase Inv. Cathode
66	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inv. Plate Load
67	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Output Grid
68	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " "
69	12KΩ	½		BTS-12K	Br.-Red-Or. Decoupling
70	10KΩ	20		DG-10K	Bias
71	8200Ω	½		BTS-8200	Gray-Red-Red Feedback
72	2500Ω	10		AB-2500	Filter
73	80Ω	10		ABA-100	Series Filament-See Note
74	750Ω	10		AB-750	Filament Shunt

Note-On IRC replacement, set slider 80Ω from one end. Some models may use two 40Ω resistors in series in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
75	117V AC	700V AC	5.2V AC	6.4V AC	P-25	P-4081*	T22R33*†	A-3155*†
	@ 1.0A	.145A DC	@ 2.0A	@ 2.65A				

*Add series resistor to reduce plate voltage. †Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
76	7000Ω CT	4Ω 8Ω 15Ω 125Ω 250Ω 500Ω	205Ω CT	.4Ω .5Ω .8Ω 10Ω 14Ω 20Ω	T-25HF	A-3401	T22S68	A-3130	

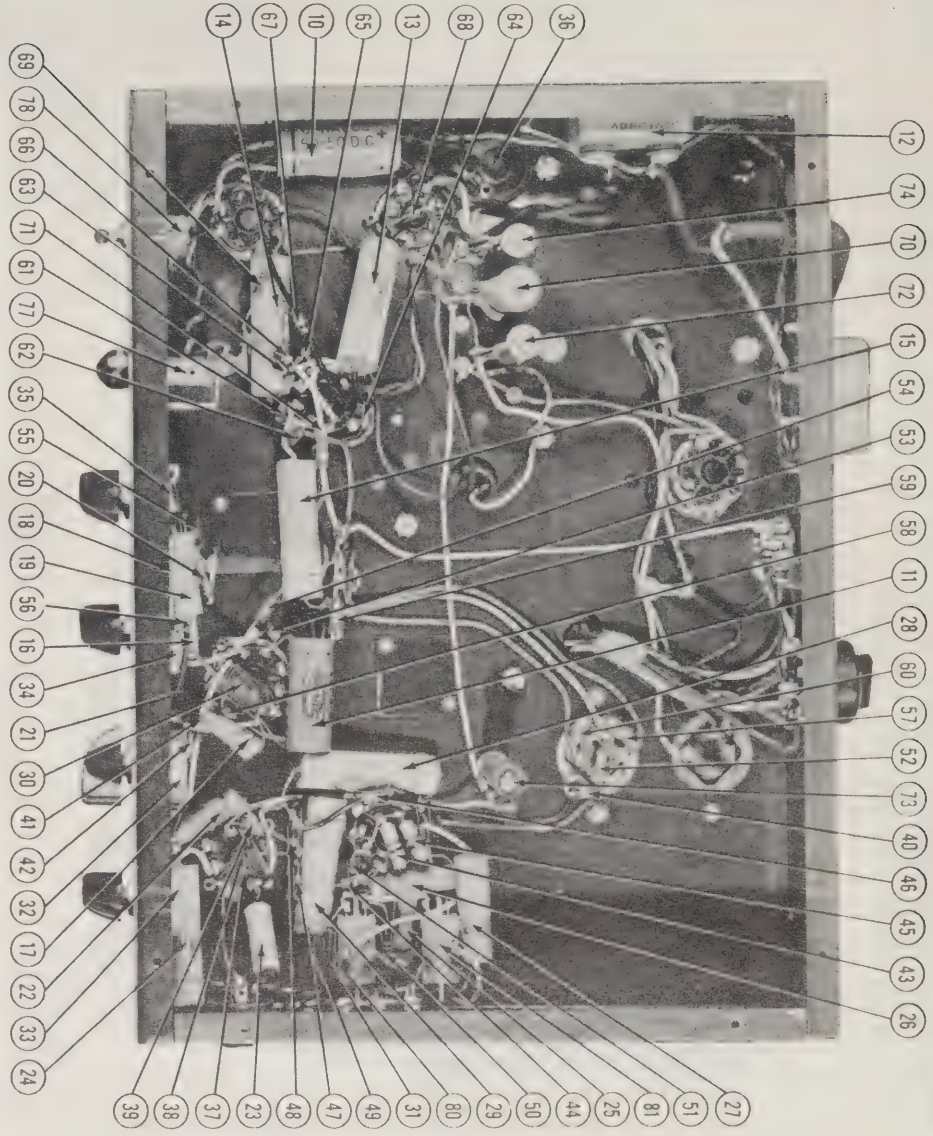
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MASCO PART No.		
77	Bayonet	6-8	0.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
78	Switch		On-Off
79	"		Impedance Selector
80	"		Input Matching
81	"		" "
82	Fuse		1.5 Amp. (3 AG)

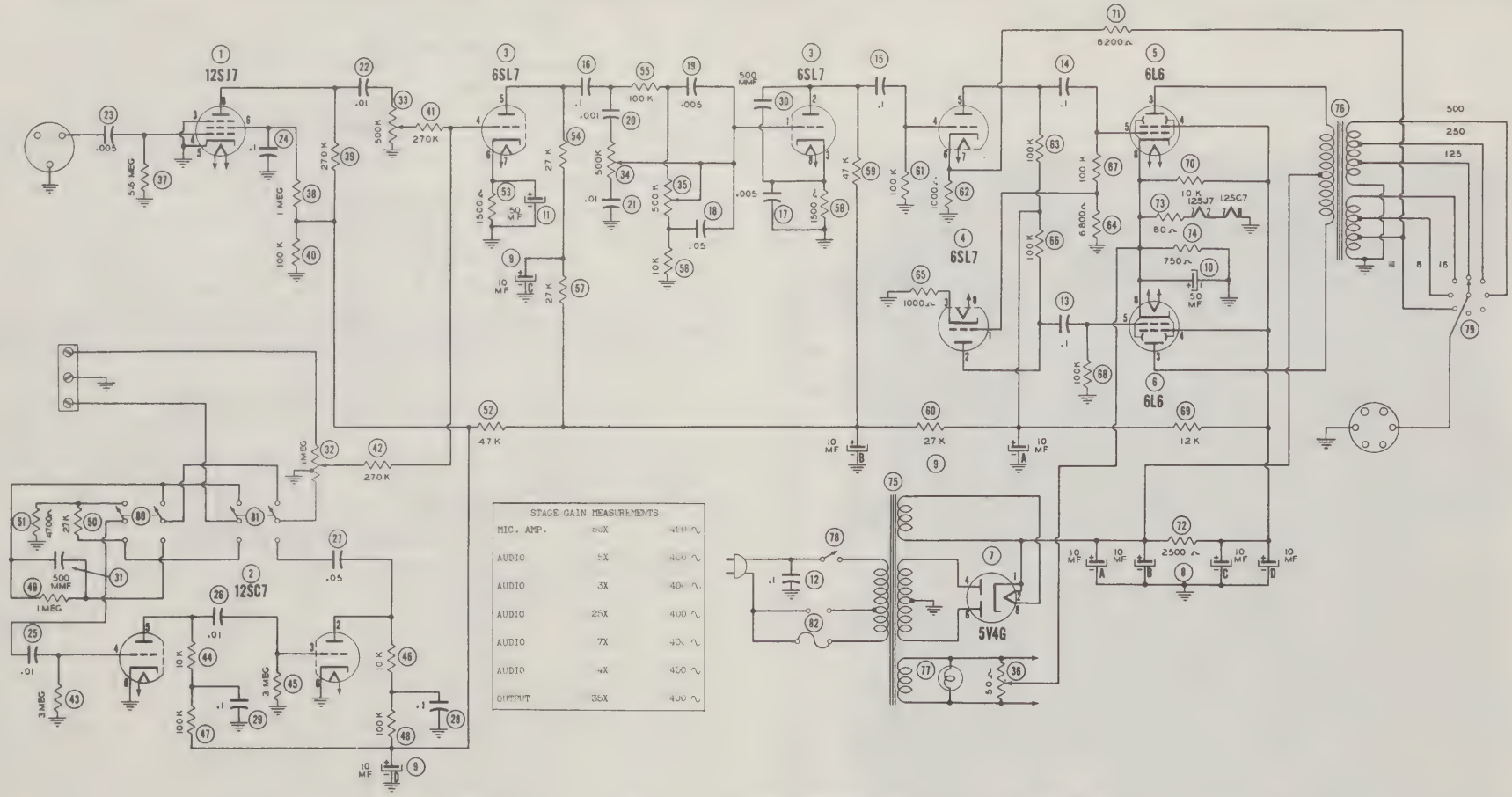
CHASSIS—BOTTOM VIEW



MASCO MODEL MA-25HF

DATE 1/49-#492-13 SET #54-FOLDER #13

MASCO MODEL MA-25HF



TUBES #3, #4, #5 and #6 MEASURE 6.4V AC ACROSS FILAMENT PINS.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SJ7	0V.	6.8VDC	0V.	-.1VDC	0V.	6.4VDC	13VDC	5.8VDC
2	12SC7	0V.	58VDC	0V.	-.1VDC	50VDC	0V.	6.8VDC	0V.
3	6SL7GT	0V.	115VDC	1VDC	-.1VDC	90VDC	.2VDC	21.5VDC	21.5VDC
4	6SL7GT	0V.	115VDC	1VDC	0V.	115VDC	1VDC	21.5VDC	21.5VDC
5	6L6G	0V.	21.5VDC	375VDC	290VDC	0V.	0V.	21.5VDC	21.5VDC
6	6L6G	0V.	21.5VDC	375VDC	290VDC	0V.	0V.	21.5VDC	21.5VDC
7	5V4G	0V.	385VDC	0V.	350VAC	.V.	350VAC	0V.	385VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SJ7	0Ω	12Ω	0Ω	5.6 Meg.	0Ω	1 Meg.	43Ω	350KΩ
2	12SC7	0Ω	150KΩ	3 Meg.	3 Meg.	150KΩ	0Ω	12Ω	0Ω
3	6SL7GT	10KΩ	90KΩ	1.5KΩ	140KΩ	90KΩ	1.5KΩ	100Ω	100Ω
4	6SL7GT	6.8KΩ	140KΩ	1KΩ	100KΩ	140KΩ	1KΩ	100Ω	100Ω
5	6L6G	0Ω	100Ω	12KΩ	10KΩ	12KΩ	INF.	100Ω	90Ω
6	6L6G	0Ω	100Ω	12KΩ	10KΩ	110KΩ	INF.	100Ω	90Ω
7	5V4G	INF.	12KΩ	INF.	44Ω	INF.	4Ω	INF.	12KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1949

492-13

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

MOTOROLA MODEL
68T11 (Ch. HS-144)

MOTOROLA MODEL
68T11 (Ch. HS-144)

MOTOROLA MODEL 68T11

TRADE NAME	Motorola, Model 68T11 (Ch. HS-144)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	AC Operated Superheterodyne Receiver with Loop Ant.
TUBES (FIVE)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 or 7B6 Det.-AVC-AF, 7A5 Power Output.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1640KC RATING .26 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

There are three calibration marks on lower edge of dial backplate. These are in order from left to right; low freq. end limit, 1400KC, and high freq. end limit. To set dial pointer turn tuning cap. fully closed and set pointer to low freq. end limit.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 6SA7. Low side to B-.	455KC	Tuning cap. fully open.	across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2		Loop	1400KC	1400KC calibration mark.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	"	Tune for maximum output.	"	A6,A7	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-14 SET #54-FOLDER #14

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 68T11

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4A	Det.-AVC-AF	6SQ7	6SQ7	8Q	
B	Det.-AVC-AF	7B6	7B6	8W	
5	Power Output	7A5	7A5	6AA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	200	23B470429		UP44215	DY-403020-150	EL-224	■ Filter
B	20	150						▲ "
C	20	150						" "
7	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	Line Filter
8	.15	200	8A75566	484-.15	GT4P2	ST-4-2	72P3	Line Isolation
9	.02	400	8S9802	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
10	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
11	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	" "
12	.003	600	8S9835	684-003	GT6D3	ST-6-003	TC-23	Tone Compensation
13	.1	400	8S9807	484-.1	GT4P1	ST-4-1	TC-1	RF Bypass Pwr. Supply
14	.25	100	8S9810	484-.25	GT2P25	ST-2-25	TC-25	Tone Compensation
15	.05	100	8A71213	484-05	GT2S5	ST-4-05	TC-15	Feedback Filter
16	250	500	21R6648	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
17	250	500	21R6648	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter
18	250	500	21R6648	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter
19	100	300	21R6631	1468-0001	5W5T1	MO.5-31	1FM-31	Fixed Trimmer

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
20A	500KΩ	½	18K482778	D17-133X#	A-81#	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 20A per instructions
C	Switch		" "	41	SW-A	" " " " "

#Use original sleeve to actuate tone switch. File groove in shaft to duplicate original.

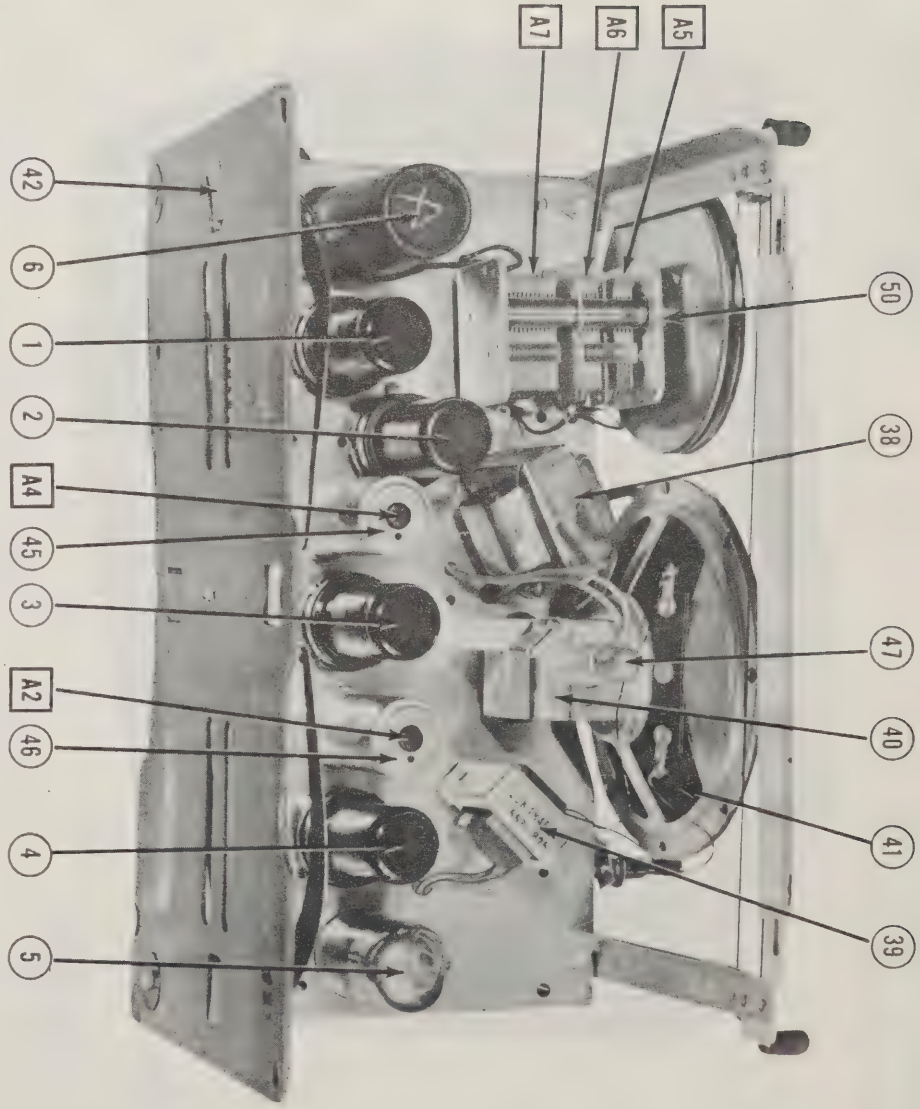
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
21	470Ω	½	6R3949	BTS-470	Yl.-Vi.-Br. Parasitic Suppressor
22	220Ω	½	6R3933	BW-½-220	Red-Red-Br. " "
23	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. Osc. Grid
24	68Ω	½	6R6007	BW-½-68	Blue-Gray-Blk. IF Cathode
25	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or. Diode Filter
26	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
27	100Ω	½	6R6328	BW-½-100	Br.-Blk.-Br. AF Cathode
28	3.3 Meg.	½	6R62118	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
29	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. AF Plate Load
30	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. Output Grid
31	150Ω	½	6R6373	BW-½-150	Br.-Grn.-Br. Output Cathode
32	1200Ω	½	6R6393	BTS-1200	Br.-Red-Red Feedback
33	1200Ω	½	6R6393	BTS-1200	Br.-Red-Red "
34	1000Ω	2	6R476004	BT-2-1000	Br.-Blk.-Red Filter
35	180Ω	2	6R3968	BW-2-180	Br.-Gray-Br. "
36	27Ω	2	6R3994	BW-2-27	Red-Vi.-Blk. Surge Limiter
37	150KΩ	½	6R6182	BTS-150K	Br.-Grn.-Yl. Line Isolation

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
38	117V AC @ .15A	6.4V AC @ 2.0A			24B484582			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
39	1900Ω	3.2Ω	200Ω	.3Ω	25K484589	A-3876‡	T22845‡	A-2929‡	‡Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD RES.	VC IMP.		ST-105†		†Drill and tap magnet frame.
40	PM	3.2Ω	50B485935	Mod. P5-X	5A15†	
	CONE DIA.	VC DIA.				
41	4½"	9/16"				

R F COILS

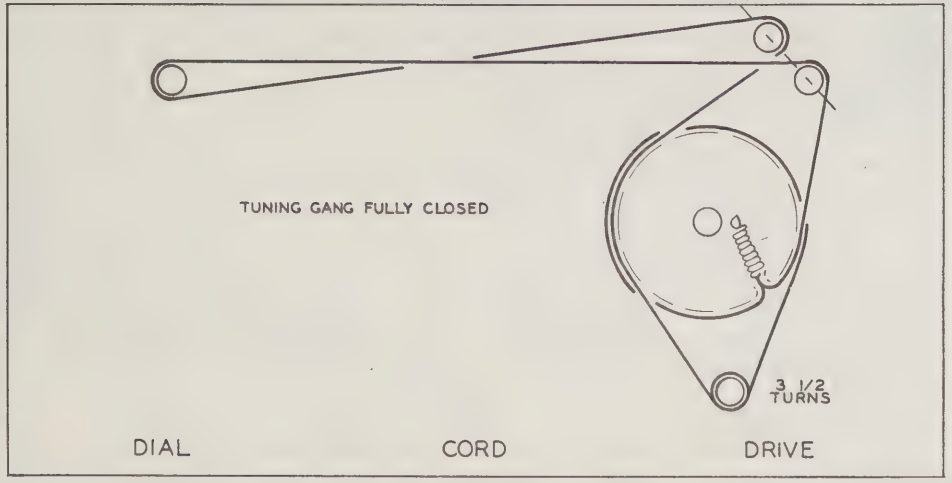
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
42	Loop Ant.	0Ω	2Ω	24K77323		
43	RF Coil	2.5Ω	8Ω	24B484512		
44	Osc. Coil	.8Ω	7Ω	24B484511	14-1060*	*Add 50MMFD from high side tuning cap. to junction of resistors 22 & 23.
45	Input IF	13Ω	13Ω	24B482863	16-6678	
46	Output IF	13Ω	13Ω	24B482865	16-6678	

DIAL LIGHT

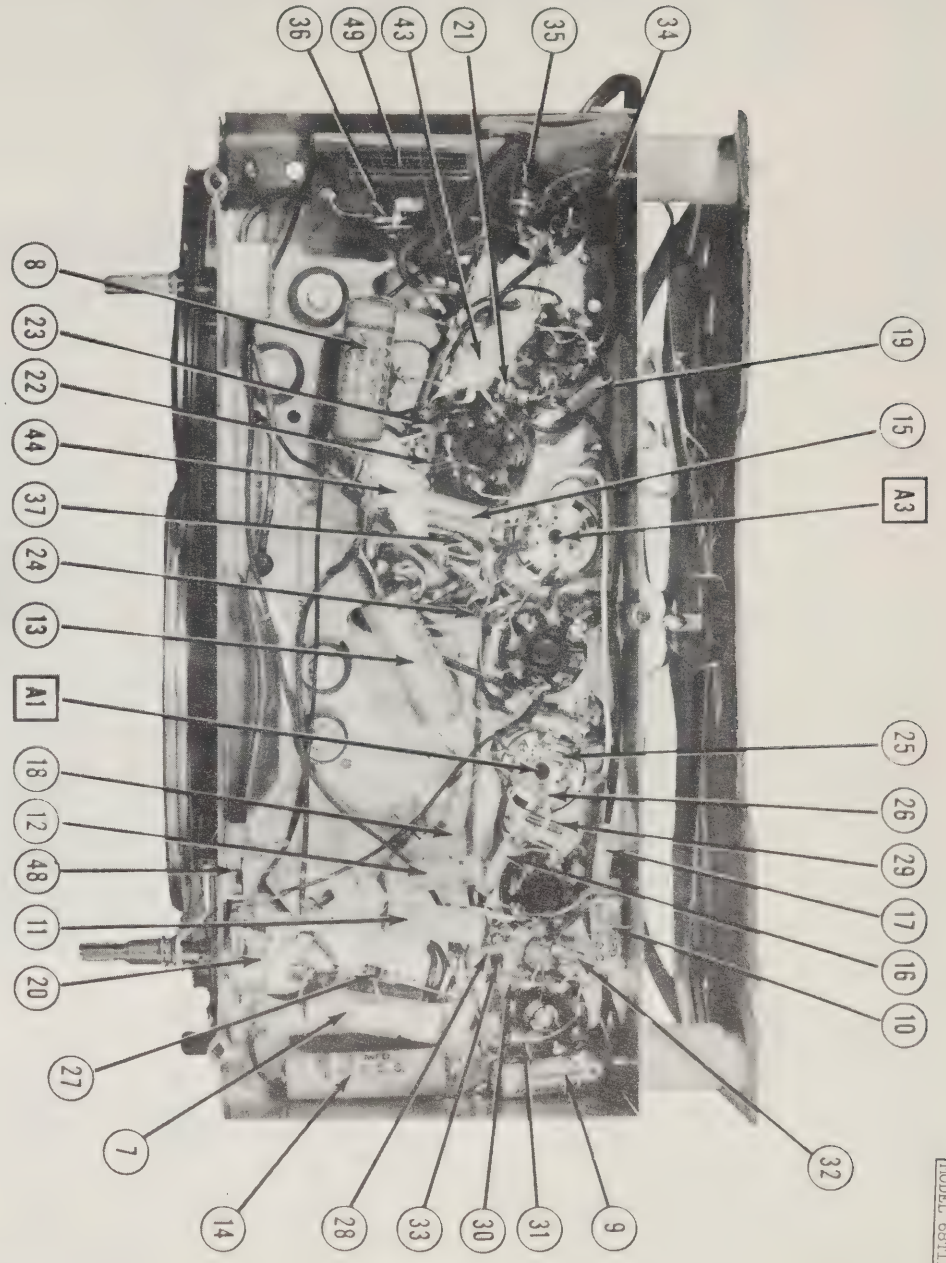
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MOTOROLA PART No.		
47	Bayonet	6-8	0.15	Brown	65X11854		Type #47

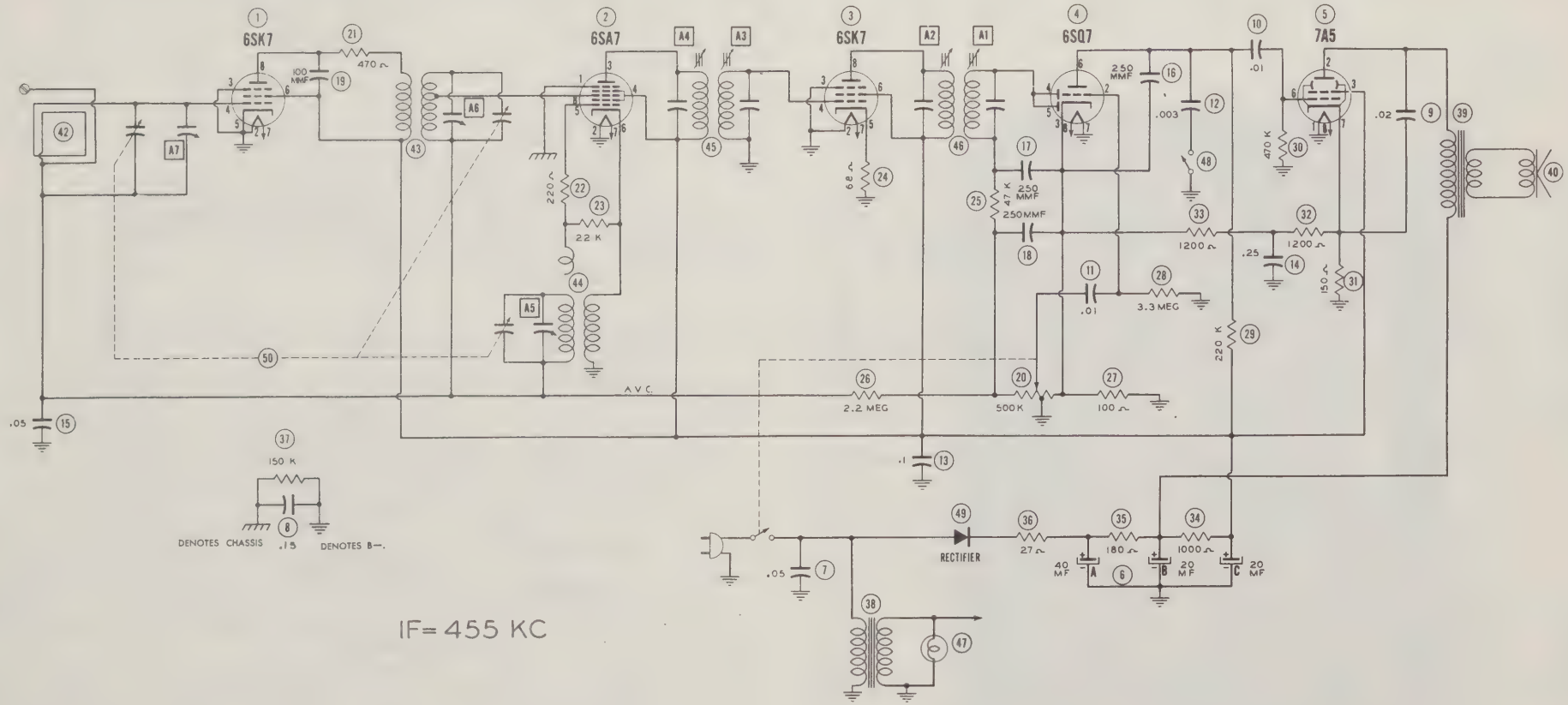
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
48	Switch	40K21758	Tone
49	Rectifier	48B90140	Selenium
50	3 Gang Var. Cap	1X485124	(32-432MMF, 15-212MMF, 13-85 MMF)
	Dial Pointer	52A480285	
	Knob	36K482767	Tone
	"	36K482765	Volume
	"	36K485133	Tuning
	Cabinet	16K485119	



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-.4VDC	0V.	83VDC	6.4VAC	78VDC
2	6SA7	0V.	0V.	83VDC	83VDC	-5.7VDC§	0V.	6.4VAC	-.4VDC
3	6SK7	0V.	0V.	0V.	0V.	.8VDC	83VDC	6.4VAC	83VDC
4	6SQ7	0V.	-.4VDC	.2VDC	-.4VDC	-.4VDC	55VDC	0V.	6.4VAC
5	7A5	6.4VAC	83VDC	83VDC	83VDC	2.3VDC	0V.	4.4VDC	0V.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	150KΩ	0Ω	0Ω	2.6 Meg.	0Ω	30KΩ	.1Ω	30KΩ
2	6SA7	150KΩ	0Ω	30KΩ	30KΩ	22KΩ	.8Ω	.1Ω	2.6 Meg.
3	6SK7	150KΩ	0Ω	0Ω	13Ω	686Ω	30KΩ	.1Ω	30KΩ
4	6SQ7	150KΩ	3.3 Meg.	100Ω	550KΩ	550KΩ	280KΩ	0Ω	.1Ω
5	7A5	.1Ω	30KΩ	30KΩ	30KΩ	470KΩ	470KΩ	150Ω	0Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY
ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

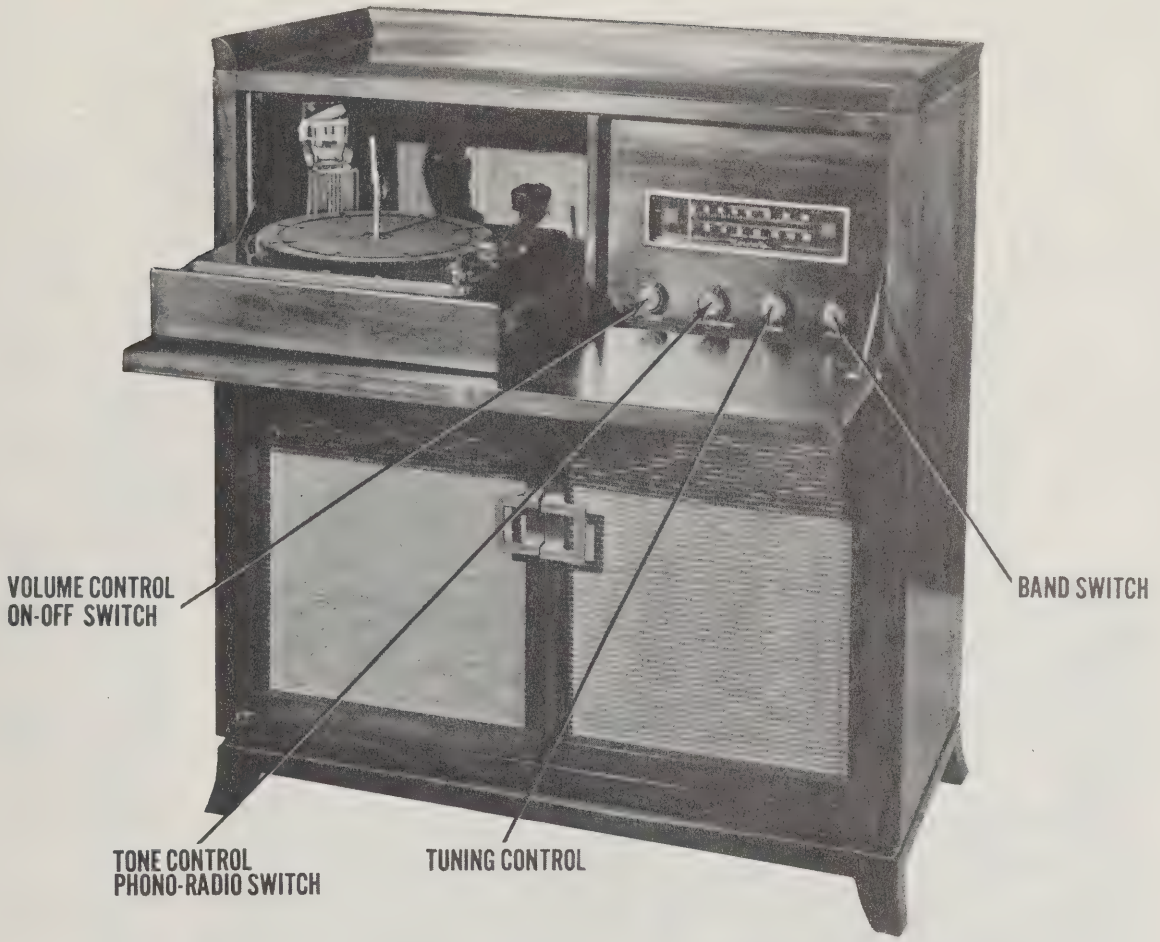
© Howard W. Sams & Co., Inc. 1949

492-14

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

MOTOROLA MODEL
88FM21 (Ch. HS-133)



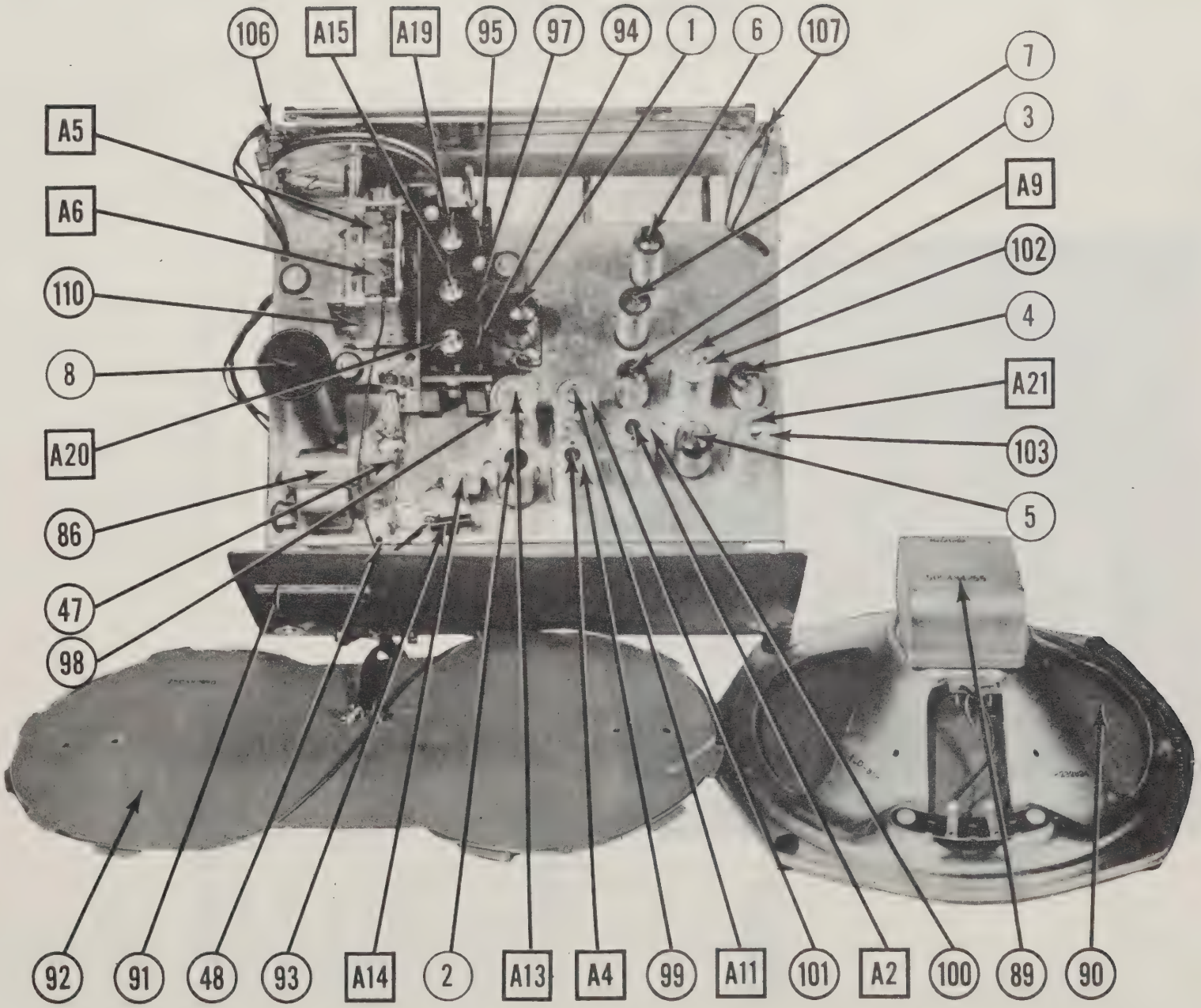
MOTOROLA MODEL
88FM21 (Ch. HS-133)

MOTOROLA MODEL 88FM21

TRADE NAME	Motorola, Model 88FM21 (Ch. HS-133)		
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.		
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna		
TUBES (SEVEN)	Types, 12AT7 FM Converter, 6BE6 FM 1st IF-AM Converter, 6BA6 FM 2nd IF-AM IF Amp., 6BA6 FM 3rd IF Amp., 19T8 Det.-AVC-AF, (2) 50B5 Power Output.		
POWER SUPPLY	105-125 Volts AC	RATING	.45 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC	FREQ. MOD.	88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


106
A15
A19
95
97
94
1
6
107
7
3
A9
102
4
A21
103
5
A5
A6
110
8
A20
86
47
98
92
91
48
93
A14
2
A13
A4
99
A11
101
A2
100
89
90

A7
A1
A8
A10
A3
A12
A17
A18
A

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM Converter	12AT7	12AT7		
2	FM 1st IF-AM Conv.	6BE6	6BE6	7CH	
3	FM 2nd IF-AM IF Amp.	6BA6	6BA6	7BK	
4	FM 3rd IF Amp.	6BA6	6BA6	7BK	
5	Det.-AVC-AF	19T8	19T8		
6	Power Output	50B5	50B5	7BZ	
7	" "	50B5	50B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	125	150	23B482811					◓ Filter
B	125	150						■ "
C	40	150						▲ Decoupling
D	100	25						Cathode Bypass
9	8	50	23A481316	PRS50/10	BR105	M-10-50	TA-510	Stabilizing Cap.
10	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	Line Filter
11	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	RF Bypass
12	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Output Plate Bypass
13	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	" "
14	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
15	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	" "
16	.005	600	8S9813	684-005	GT6D5	ST-6-005	TC-25	Tone Comp.
17	.05	100	8S9805	484-05	GT2S5	ST-4-05	TC-15	Bias Filter
18	.01	100	8S9809	484-01	GT2S1	ST-4-01	TC-11	Tone Comp.
19	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
20	.1	400	8S9807	484-.1	GT4P1	ST-4-1	TC-1	Phono Isolation
21	.05	400	8S9816	484-05	GT4S5	ST-4-05	72P1	Line Isolation
22	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	3rd IF Decoupling
23	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	3rd IF Grid Filter
24	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	2nd IF Decoupling
25	.01	200	8S9825	484-01	GT2S1	ST-4-01	TC-11	AVC Filter
26	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	RF Bypass Power Supply
27	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	FM 1st IF Plate Decoup.
28	.02	100	8K471628	484-02	GT2S2	ST-4-02	TC-12	FM 1st IF Cath. Byp.
29	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	FM Conv. Plate Decoup.
30	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Fil. Bypass
31	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	" "
32	.02	400	8S9802	484-02	GT4S2	ST-4-02	TC-12	RF Bypass
33	250	500	21K77375	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass-Cer.
34	250	500	21K77375	1468-00025	5W5T25	MO.5-325	1FM-325	Tone Comp.-Cer.
35	100	500	21B77286	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter-Cer.
36	1000	500	21K478410	1464-001	2R5D1	MWS.5-21	MS-21	Diode Load Cap.-Cer.-Note
37	1000	500	21K478410	1464-001	2R5D1	MWS.5-21	MS-21	"
38	1000	500	21K478410	1468-001	1W5D1	MW.5-21	1FM-21	De-emphasis -Cer.
39	4700	500	21B470567	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass "
40	250	500	21K77375	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter "
41	100	500	21B77286	1468-0001	5W5T1	MO.5-31	1FM-31	" " " "
42	50	500	21K77373	1469-00005	5R5Q5	MOS.5-45	MS-45	AM Osc. Grid Cap. "
43	25	500	21K31493	1469-000025	5R5Q25	MOS.5-425	MS-425	Fixed Trimmer "
44	50	500	21R6642	1468-0005	5W5T5	MO.5-35	1FM-35	AM RF Coupling "
45A	250	450	21B484337	1469-00025	5R5T25	MOS.5-325	MS-325	Osc. Coupling "
B	250	450		1469-00025	5R5T25	MOS.5-325	MS-325	Osc. Grid Cap. "
46	1000	500	21K478410	1468-001	1W5D1	MW.5-21	1FM-21	RF Bypass "
47	7	300	21K484347	1468-00001	5W5Q1	MO.5-41	1FM-41	FM RF Coupling "
48	7	300	21K484347	1468-00001	5W5Q1	MO.5-41	1FM-41	FM Ant. Coupling "

Note-When either item numbers 36 or 37 are replaced, replace both with capacitors of equal value.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
88	1200Ω 1200Ω	3.7Ω	51Ω 213Ω	.3Ω	25B482808				

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: VC IMP.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
89	PM	3.7Ω	50C484255	ST-120† Mod. P10-S	10A31	†Replace output transformer to match 6-8Ω voice coil.
90	CONE DIA. 9½"	VC DIA. 1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: MEISSNER PART No.	
91	Loop Ant.BC	0Ω	1Ω	24C482833		
92	" " FM		0Ω	24C482890		
93	Wave Trap Coil		4Ω	24A77240		
94	Ant. Coil FM		0Ω			Items 94, 95 and 97 are ganged together and slug tuned.
95	FM Variable IF		0Ω			
96	Osc. Coil BC	.8Ω	5.5Ω	24A484336	14-1060	
97	" " FM		0Ω			
98	1st IF FM	.5Ω	.8Ω	24B481391	16-6678	
99	" " AM	12Ω	12Ω	24B482863		
100	2nd IF AM	12Ω	12Ω	24B482865	16-6678	
101	" " FM	.8Ω	.8Ω	24B471670		
102	3rd IF FM	.8Ω	.8Ω	24B471672		
103	FM Det.Tran.	3.5Ω	1.5Ω	24B481393		
104	RF Choke		11Ω	24A470505		
105	Fil. Choke		0Ω	24A74989		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA	INSTALLATION NOTES
106	Bayonet	6-8	0.15	Brown	65X11854		Type #47
107	"	6-8	0.15	"	65X11854		" "

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
108	Switch	40B470432	Band
109	Rectifier	48B482807	Selenium (150MA)
110	2 Gang Var. Cap	19K482832	(30-522MMF, 22-250MMF)
A14	Trimmer	20A75234	Wave Trap Adj.
A16	"	19A470426	FM Osc. Adj.
	Dial Scale	34C482384	
	Dial Pointer	52B481704	
	Cabinet	16F482827	
	Knob	36K471545	Plain
	"	36K471324	With Dot

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	
49A	1 Meg.	½	18K471518	D13-137X	AT-98	Volume Control tapped @ 300KΩ
B	Shaft		Not Req.	E	KSS-3	Attach to 49A per instructions
C	Switch		" "	41	SW-A	" " " " "
50	1 Meg.	½	18K482815			Tone Control & Radio-Phono-Sw.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
51	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. 1st FM Conv. Grid
52	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. 2nd FM Conv. Grid
53	8200Ω	1	6R5610	BTA-8200	Gray-Red-Red 1st FM Conv. Plate
54	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. 2nd FM Conv. Plate Decoup.
55	56KΩ	½	6R6378	BTS-56K	Grn.-Blue-Or. 1st FM IF Transformer Sec. Shunt
56	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. AM Osc. Grid
57	330Ω	½	6R6022		Or.-Or.-Br. FM 1st IF Cathode
58	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AM Conv. Grid
59	1000Ω	½	6R6301	BTS-1000	Br.-Blk.-Red FM 1st IF Plate Decoup.
60	33KΩ	½	6R6012	BTS-33K	Or.-Or.-Or. FM 2nd IF Transformer Sec. Shunt
61	68Ω	½	6R6007		Blue-Gray-Blk. 2nd IF Cathode
62	1000Ω	½	6R6301	BTS-1000	Br.-Blk.-Red 2nd IF Decoup.
63	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or. Diode Filter
64	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
65	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. 3rd IF Grid
66	1000Ω	½	6R6301	BTS-1000	Br.-Blk.-Red 3rd IF Decoup.
67	470Ω	½	6R6090	BTS-470	Yl.-Vi.-Br. RF Filter
68	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. De-emphasis
69	15KΩ	½	6R2119	BTS-15K	Br.-Grn.-Or. Ratio Det. Diode Load
70	4700Ω	½	6R6039	BTS-4700	Yl.-Vi.-Red " " " "
71	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
72	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. AF Grid
73	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl. AF Plate Load
74	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. Output Grid
75	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. " "
76	180Ω	1	6R6390	BW-1-180	Br.-Gray-Br. AF Divider Network
77	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl. Tone Compensation
78	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl. Bias
79	6.8Ω	½	17K484269	BW-½-6.8	Blue-Gray-Gold Bias
80	68Ω	2	17A470492	BW-2-68	Blue-Gray-Blk. "
81	150KΩ	½	6R6182	BTS-150K	Br.-Grn.-Yl. Line Isolation
82	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. Phono Isolation
83	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. Phono Tone Compensation
84	470Ω	1	6R488110	BTA-470	Yl.-Vi.-Br. Filter
85	22Ω	2	6R488111	BW-2-22	Red-Red-Blk. Surge Limiter
111	33KΩ	½	6R6012	BTS-33K	Or.-Or.-Or. FM 3rd IF Transformer Sec. Shunt

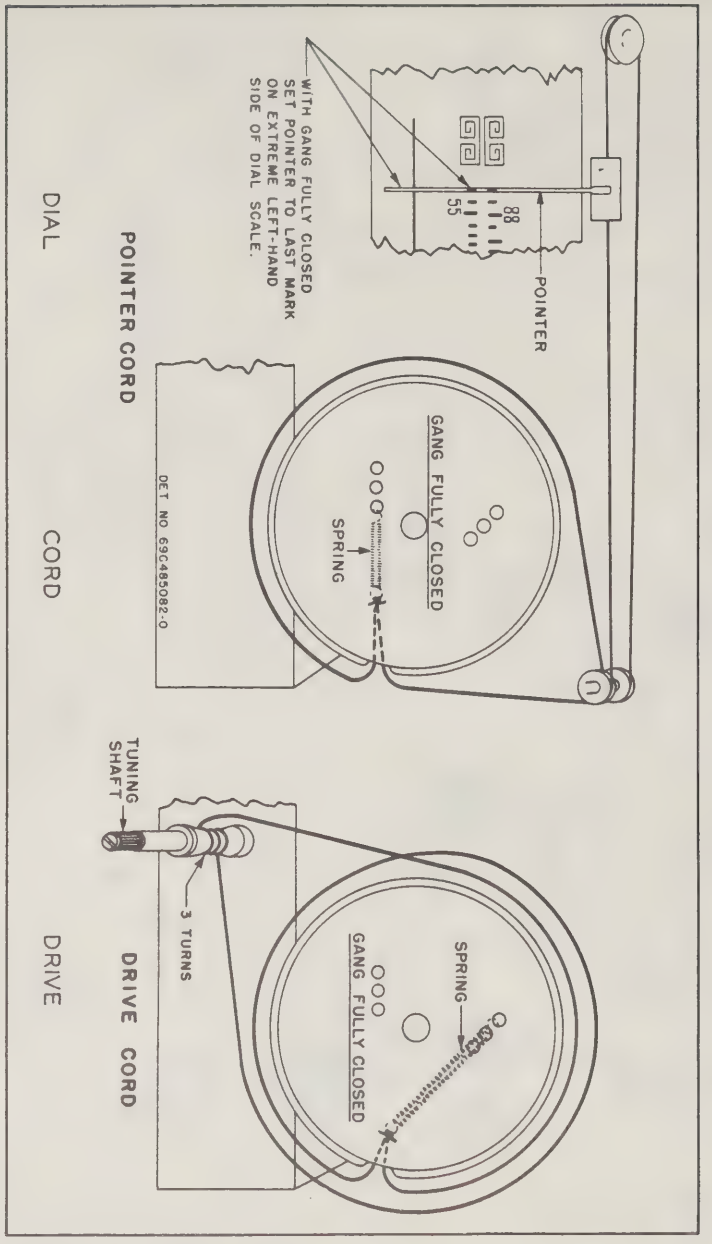
TRANSFORMER (FILAMENT)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
86	117V AC @ .12A	6.7V AC @ 1.5A			25B4828101	P-6134#	T21F08	

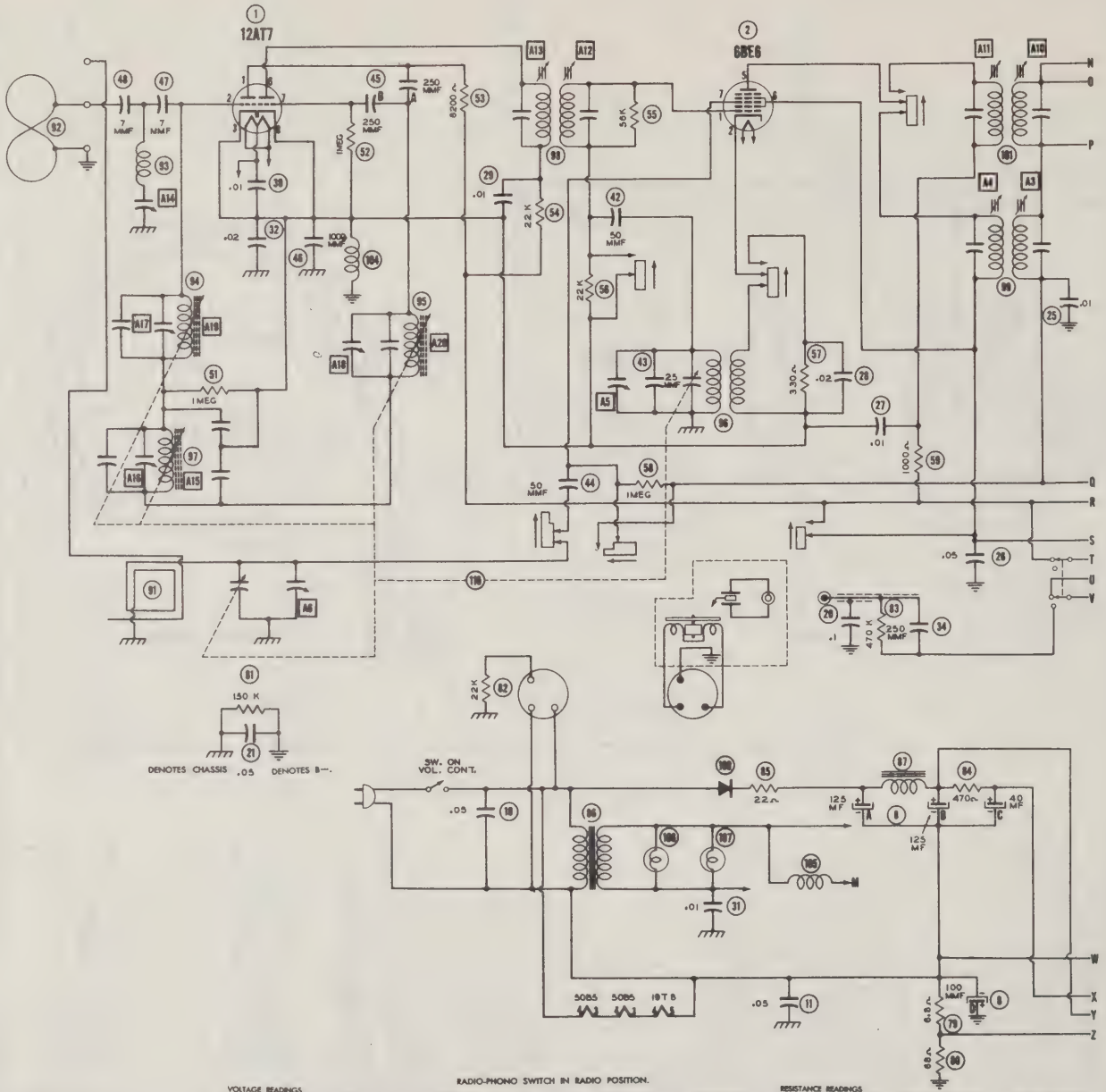
#Drill one new mounting hole.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
87	.107 A.	76Ω	2 Henries	25B482809				



DATE 1/49-#492-15 SET #54-FOLDER #15



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
‡ 1	12AT7	80VDC	1.4VDC	8.4VDC	0V.	0V.	75VDC	7.7VDC§	8.4VDC	6.7VAC
2A	6BE6	3VDC§	8.4VDC	6.7VAC	0V.	110VDC	110VDC	.3VDC	-	-
‡ 2B	6BE6	.2VDC	11VDC	6.7VAC	0V.	110VDC	110VDC	.3VDC	-	-
3	6BA6	.5VDC	8.4VDC	6.7VAC	0V.	95VDC	95VDC	9.2VDC	-	-
‡ 4	6BA6	3.9VDC	8.4VDC	6.7VAC	0V.	95VDC	95VDC	8.4VDC	-	-
5A	19T8	0V.	8.5VDC	0V.	18VAC	0V.	1.8VDC	8.4VDC	.5VDC	80VDC
‡ 5B	19T8	8VDC	7.2VDC	-1.4VDC	18VAC	0V.	.6VDC	8.4VDC	.5VDC	80VDC
6	5CB5	0V.	8.4VDC	65VAC	117VAC	120VDC	110VDC	0V.	-	-
7	5CB5	0V.	8.4VDC	18VAC	65VAC	120VDC	110VDC	0V.	-	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RADIO-PHONO SWITCH IN RADIO POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
‡ 1	12AT7	250KΩ	1 Meg.	90Ω	0Ω	0Ω	260KΩ	1 Meg.	90Ω	.5Ω
2A	6BE6	22KΩ	90Ω	.5Ω	0Ω	240KΩ	240KΩ	4.5 Meg.	-	-
‡ 2B	6BE6	90Ω	420Ω	.5Ω	0Ω	240KΩ	240KΩ	4.4 Meg.	-	-
3	6BA6	3.5 Meg.	75Ω	.5Ω	0Ω	240KΩ	240KΩ	140Ω	-	-
‡ 4	6BA6	220KΩ	75Ω	.5Ω	0Ω	240KΩ	240KΩ	75Ω	-	-
5A	19T8	INF.	20KΩ	INF.	17Ω	0Ω	700KΩ	75Ω	2.3 Meg.	340KΩ
‡ 5B	19T8	900KΩ	20KΩ	900KΩ	17Ω	0Ω	2.3 Meg.	75Ω	2.3 Meg.	340KΩ
6	5CB5	470KΩ	75Ω	42Ω	43Ω	240KΩ	240KΩ	470KΩ	-	-
7	5CB5	470KΩ	75Ω	17Ω	42Ω	240KΩ	240KΩ	470KΩ	-	-

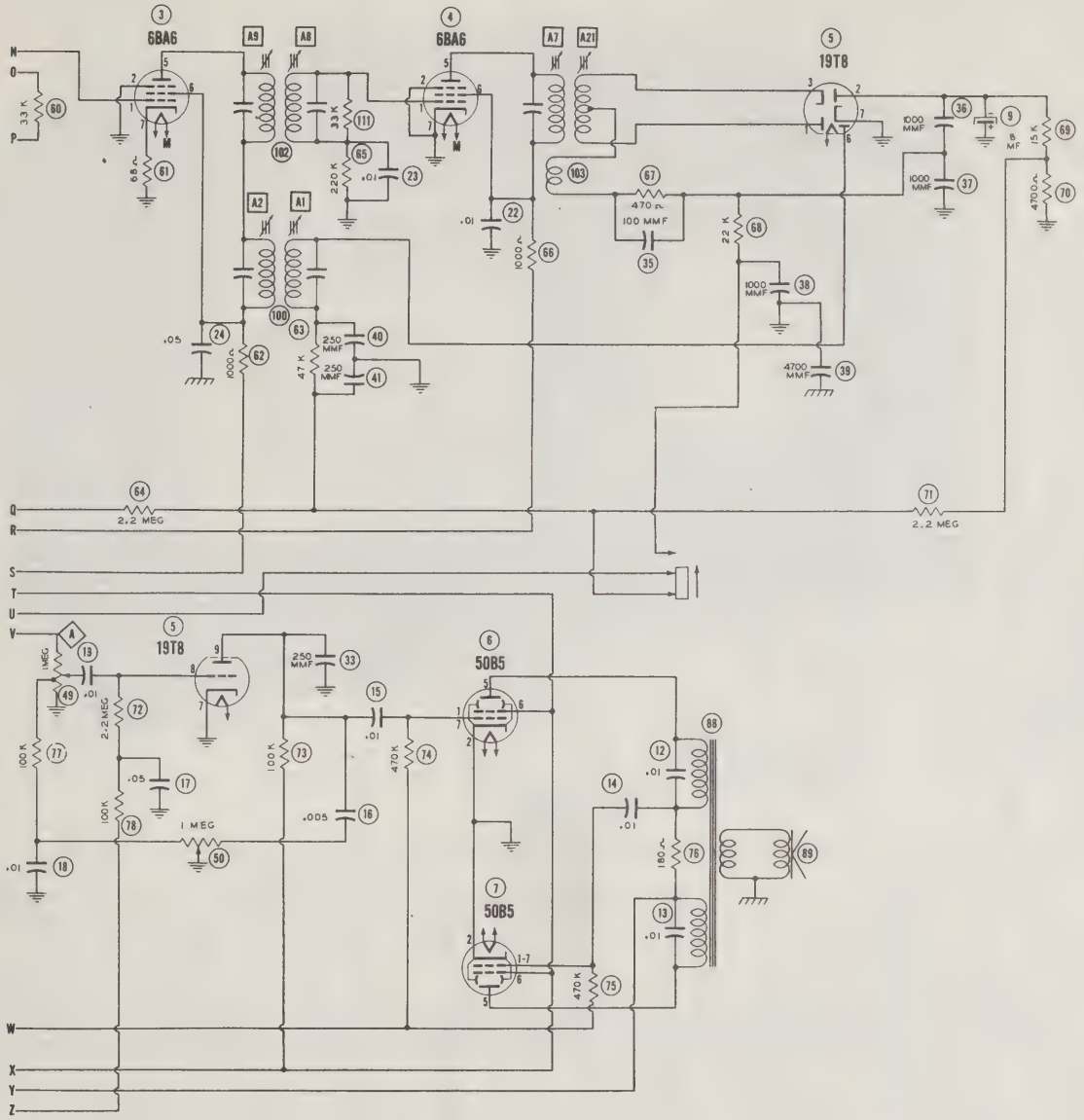
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS. THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1949



IF=455 KC AM

IF= 4.3 MC FM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1949

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Use insulated alignment screwdriver for all adjustments.

AM ALIGNMENT

The AM-IF Transformer cores are slotted for a small fiber screwdriver. Do not press hard during alignment or core threads will strip and alignment will be impossible.

If receiver oscillates during alignment, connect B- to chassis temporarily.

Use no more signal than is necessary to obtain a satisfactory output meter reading. Volume control should be set for maximum output.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 7 (grid) of 6BE6. Low side to B-.	455KC	AM (Counter-clockwise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	1620KC	"	"	"	A5	Adjust for maximum output
3		Loop	1400KC	"	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND OUTPUT METER

Use amp. modulated signal with 400 ∿ 30% modulation. Use no more signal than necessary to obtain a satisfactory output meter reading. Volume control should be set for maximum volume.

Once the discriminator secondary has been aligned (A21) no FM adjustments should be made with an AM signal.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4	.001MFD	High side to Pin 7 (grid) of 12AT7. Low side to B-.	4.3MC (400 ∿ amplitude modulation)	FM (Clock-wise)	Tuning slugs fully out.	Across voice coil	A7,A8, A9,A10 A11,A12 A13	Turn A21 out as far as possible. Adjust A7 thru A13 for maximum output.
5	300Ω carbon res.	High side to center terminal on loop. Low side to B-.	"	"	"	"	A14	Adjust for minimum output

If receiver does not have FM Osc. Trimmer (A16), perform Step 6 and disregard Steps 6A & 6B.
If receiver has FM Osc. Trimmer (A16), then disregard Step 6 and perform Steps 6A & 6B.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
6	300Ω carbon res.	High side to center terminal on loop. Low side to B-.	105MC (400 ∿ Amp. Mod.)	FM (Clock-wise)	105MC	Across voice coil	A15	Adjust for maximum output
6A	"	"	90MC	"	90MC	"	A16	" " " "
B	"	"	105MC	"	105MC	"	A15	Adjust for maximum output Repeat Steps 6A & 6B until no further improvement can be made.
7	"	"	90MC	"	Tune for maximum output.	"	A17, A18	Adjust for maximum output.
8	"	"	105MC	"	"	"	A19 A20	Adjust for maximum output. Repeat Steps 7 & 8 until no further improvement can be made.
9		Connect FM loop to receiver. Use radiation loop.	"	"	"	"	A17	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
10	.001MFD	High side to Pin 7 (grid) of 12AT7. Low side to B-.	4.3MC	"	Tuning slugs fully out.	"	A21	Adjust for minimum output. The correct adjustment is a sharply defined dip between two peaks. Make this adjustment very carefully as misalignment will result in distortion on FM reception.

FM ALIGNMENT USING FM SIGNAL GENERATOR OSCILLOSCOPE & OUTPUT METER

Connect synchronizing sweep voltage from sig. gen. in series with 500KΩ potentiometer to horizontal input terminals of scope. Connect .002 MFD cap. across horizontal input terminals. Adjustment of the 500KΩ potentiometer should enable you to maintain a single pattern. If this is not the case then different values of resistance and capacitance should be tried until a single pattern is possible in all adjustments with the scope.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4	.001MFD	High side to Pin 1 (grid) of 6BA6 3rd FM IF Tube (4). Low side to B-.	4.3MC (Freq. Mod. 60 ∿ Mod. 125KC deviation)	FM (Clock-wise)	Tuning slugs fully out.	Vertical input to Point A. Ground to B-.	A7	Turn A21 out several turns. Adjust A7 for maximum amplitude of pattern per Fig. 1.
5	.001MFD	"	"	"	"	"	A21	Adjust for symmetrical pattern of Fig. 1 with peaks occurring at about 100KC above and below 4.3MC. and with maximum straightness between peaks. Repeat Steps 4 & 5 until no further improvement can be made.
6	.001MFD	High side to Pin 1 (grid) of 6BA6 2nd FM IF Tube (3). Low side to B-.	4.3MC (Freq. Mod. 60 ∿ Mod. and 125KC deviation)	"	"	"	A8,A9	Adjust for symmetrical pattern with maximum straightness between peaks with peaks occurring at a slightly lower deviation.
7	.001MFD	High side to Pin 1 (grid) of 6BE6. Low side to B-.	"	"	"	"	A10, A11	Adjust for symmetrical pattern with maximum straightness between peaks.
8	.001MFD	High side to center terminal on loop. Low side to B-.	"	"	"	"	A12, A13	"
9	.001MFD	"	"	"	"	"	A14	Adjust for minimum amplitude.

If receiver does not have FM Osc. Trimmer (A16), perform Step 10 and disregard Steps 10A & 10B.
If receiver does have (A16), then disregard Step 10 and perform Steps 10A & 10B.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10	300Ω carbon res.	High side to center terminal on loop. Low side to B-.	105MC (Freq. Mod. 400 ∿ 22½KC deviation)	FM	105MC	Across voice coil	A15	Adjust for maximum output
10A	"	"	90MC (Freq. Mod. 400 ∿ 22½KC deviation)	"	90MC	"	A16	" " " "
10B	"	"	105MC (Freq. Mod. 400 ∿ 22½KC deviation)	"	105MC	"	A15	Adjust for maximum output Repeat Steps 10A & 10B until no further improvement can be made.
11	"	"	90MC (Freq. Mod. 400 ∿ 22½KC deviation)	"	Tune for maximum output.	"	A17, A18	Adjust for maximum output
12	"	"	105MC (Freq. Mod. 400 ∿ 22½KC deviation)	"	"	"	A19, A20	Adjust for maximum output Repeat Steps 11 & 12 until no further improvement can be made.
13		Connect FM loop to receiver. Use radiation loop.	"	"	"	"	A17	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. out.

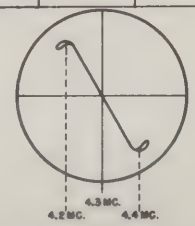
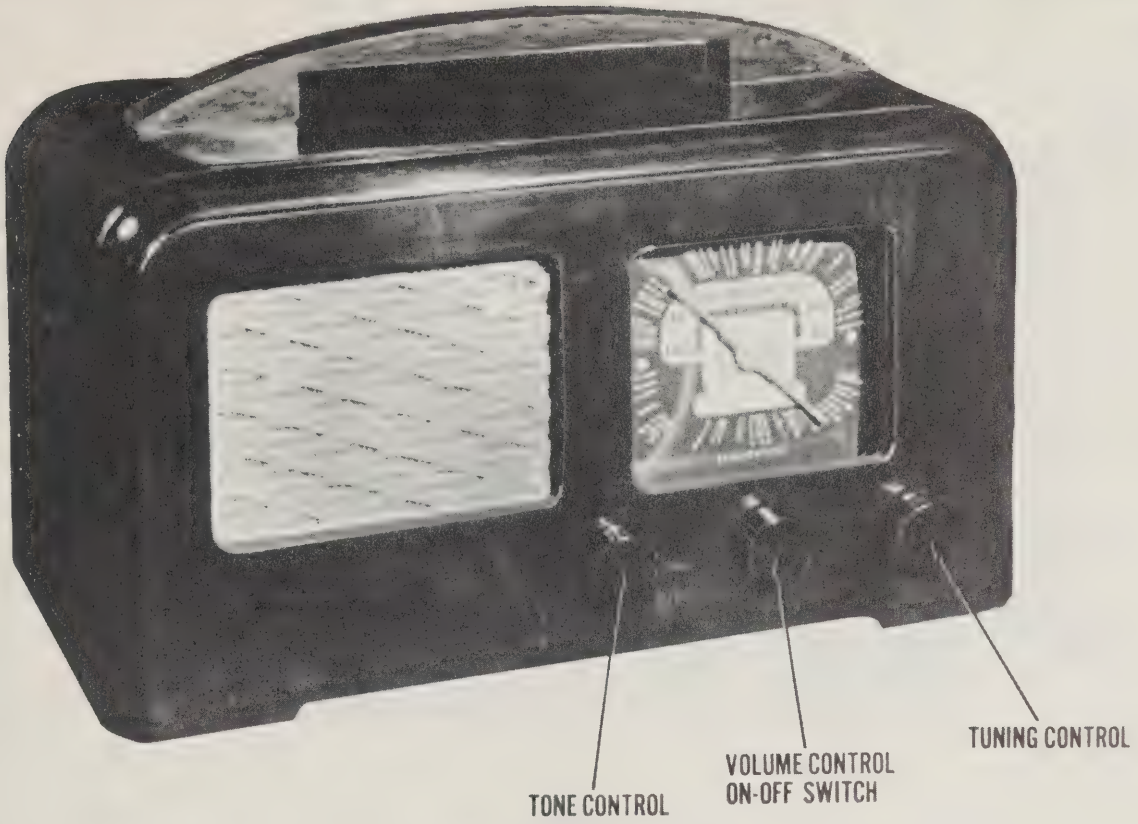


FIG. 1

PACKARD-BELL
MODEL 682



PACKARD-BELL
MODEL 682

PACKARD-BELL MODEL 682

TRADE NAME	Packard-Bell, Model 682
MANUFACTURER	Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles, Calif.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 6SS7 RF Amp., 12SA7 Converter, 6SS7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 12SA7 Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2	.1 MFD.	High side to Pin 4 (grid) of 6SS7 Tube 1. Low side to B-.	455KC	Tuning cap. fully closed.	"	A5	Adjust for minimum output.
3		Loop	1600KC	1600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1400KC	Tune for maximum output.	"	A7	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-16 SET #54-FOLDER #16

PARTS LIST AND DESCRIPTIONS

PACKARD-BELL MODEL 882

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SS7	6SS7	8N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	6SS7	6SS7	8N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	50L6GT	50L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD-BELL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150		PRSA150/30-30	EZ42215	DSB403020-150	TA-303	Filter-Red
B	30	150						" "
C	30	150		PRS150/30				" "
8	20	25		PRS25/25	BR202A	M-25-25	TA-25	Cathode Bypass
9	.05	200	23017	484-05	GT2S5	ST-4-05	TC-15	Line Filter
10	.2	200	23020	484-.2	GT4P2	ST-4-2	72P3	Line Isolation
11	.01	500	23006	684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
12	.001	600	23001	684-001	GT6D1	ST-6-001	TC-21	AF Plate Bypass
13	.05	200	23017	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
14	4000	500	23208	1467-004	1D5D4	MW.5-24	1FM-24	Output Plate Bypass
15	4000	500	23208	1467-004	1D5D4	MW.5-24	1FM-24	Tone Compensation
16	4000	500	23208	1467-004	1D5D4	MW.5-24	1FM-24	Audio Coupling
17	220	300	23915	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter-Cer.
18	220	300	23915	1468-00025	5W5T25	MO.5-325	1FM-325	Osc. Grid Cap. "
19	220	300	23915	1468-00025	5W5T25	MO.5-325	1FM-325	RF Coupling "

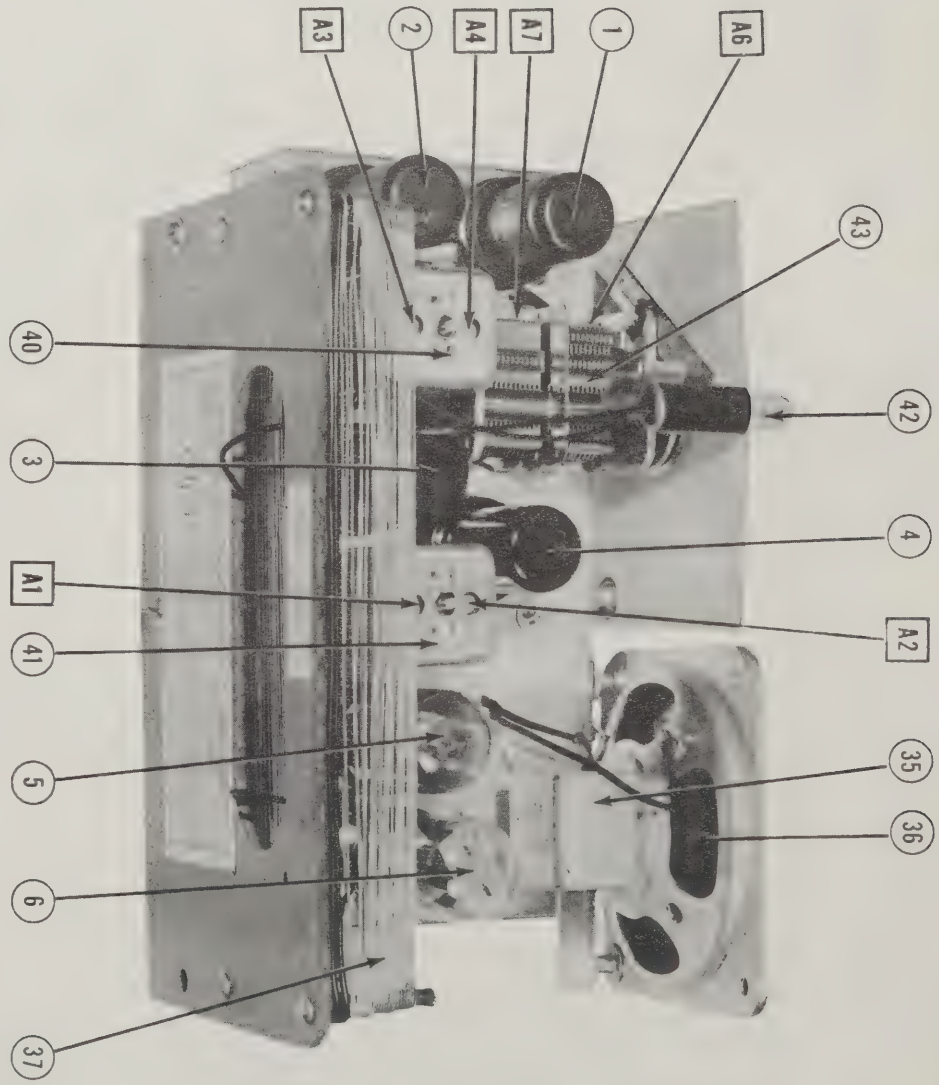
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-B. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	500KΩ	½	25014	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 20A per instructions
C	Switch		" "	41	SW-A	" " " " "
21A	3 Meg.	½	25503	D13-140	M-67-Z	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 21A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-BELL PART No.	IRC PART No.	IDENTIFICATION CODES
22	4700Ω	½		BTS-4700	Yl.-Vl.-Red RF Plate Load
23	120Ω	½	73014	BTS-120	Br.-Red-Br. RF Cathode
24	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. Conv. Grid
25	22KΩ	½	73041	BTS-22K	Red-Red-Or. Osc. Grid
26	220Ω	½	73017	BW-½-220	Red-Red-Br. IF Cathode
27	2.2 Meg.	½	73055	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28	5 Meg.	½	73057	BTS-4.7 Meg.	Grn.-Blk.-Grn. AF Grid
29	220KΩ	½	73049	BTS-220K	Red-Red-Yl. AF Plate Load
30	470KΩ	½	73051	BTS-470K	Yl.-Vl.-Yl. Output Grid
31	150Ω	½	73081	BW-½-150	Br.-Grn.-Br. Output Cathode
32	1000Ω	2		BT-2-1000	Br.-Blk.-Red Filter
33	180Ω	1		BW-1-180	Br.-Gray-Br. "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PACKARD-BELL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
34	2100Ω	4.0Ω	135Ω	.7Ω	89417	A-3876#	T22S45#	A-2028#	#Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PACKARD-BELL PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-113		
35	PM	4.0Ω	83005	Mod. P4-X	4A07	
	CONE DIA.	VC DIA.				
36	4"	9/16"				

R F COILS

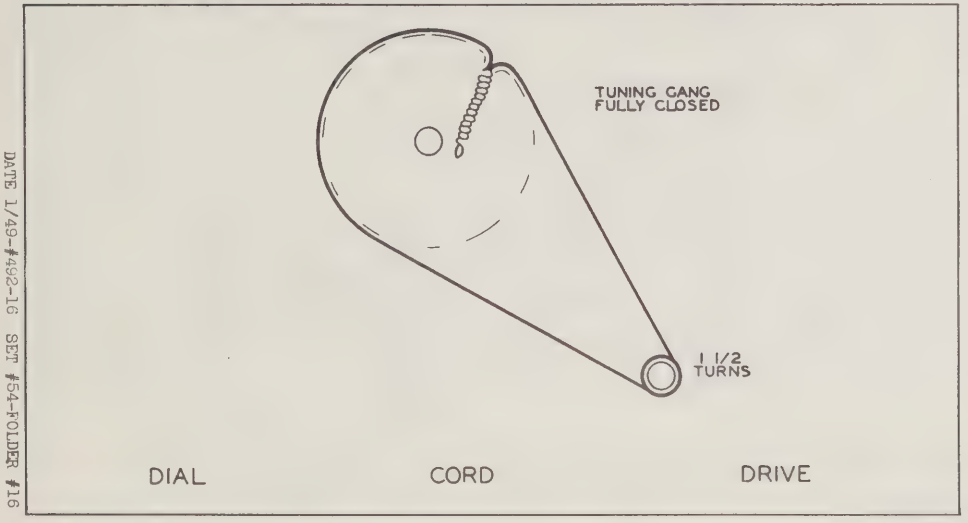
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PACKARD-BELL PART No.	MEISSNER PART No.	
37	Loop Ant.	0Ω	2Ω			
38	Wave Trap Coil		31Ω			
39	Osc. Coil	.8Ω	5.5Ω		14-1060	
40	Input IF	1Ω.5Ω	18.5Ω		16-6658	
41	Output IF	18Ω	18Ω		16-6660	

DIAL LIGHT

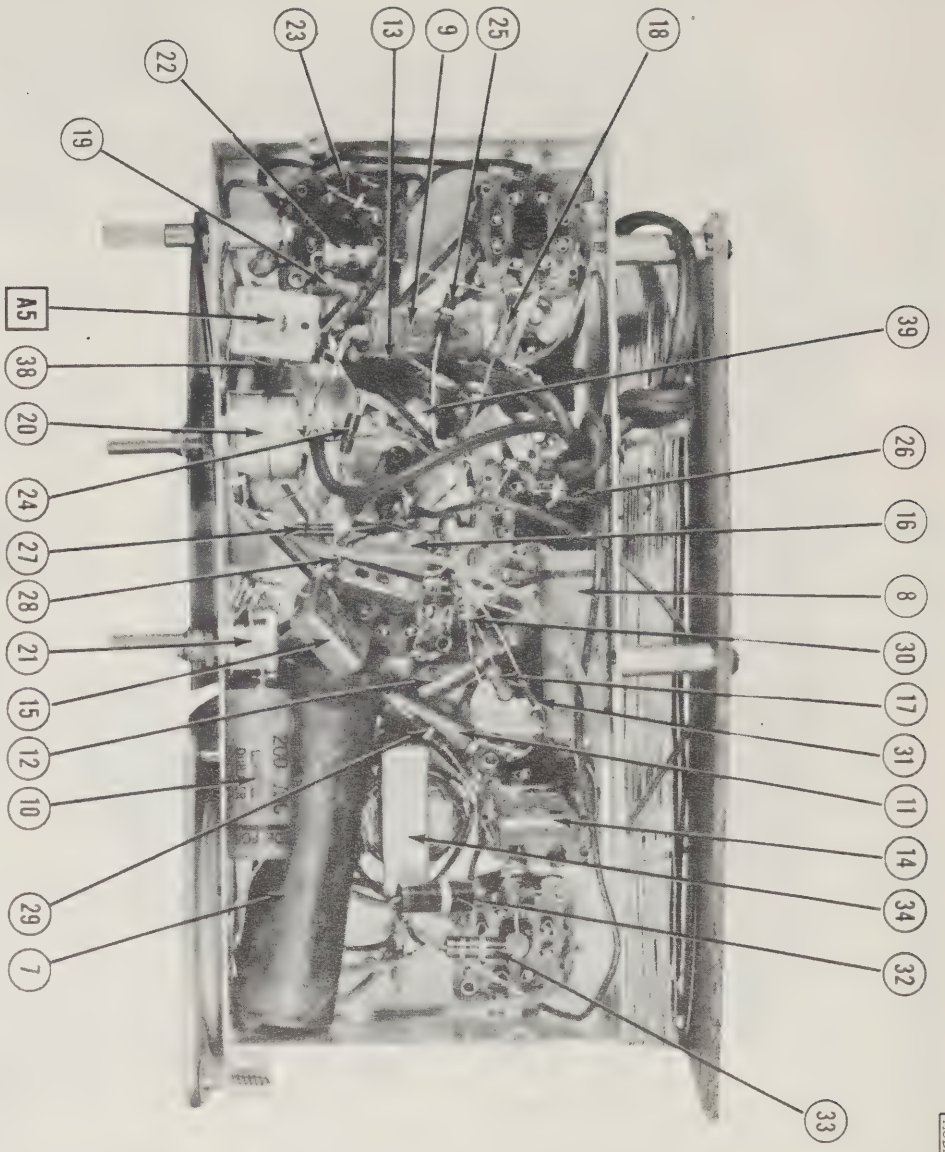
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PACKARD-BELL PART No.		
42	Bayonet	6-8	0.15	Brown			Type #47

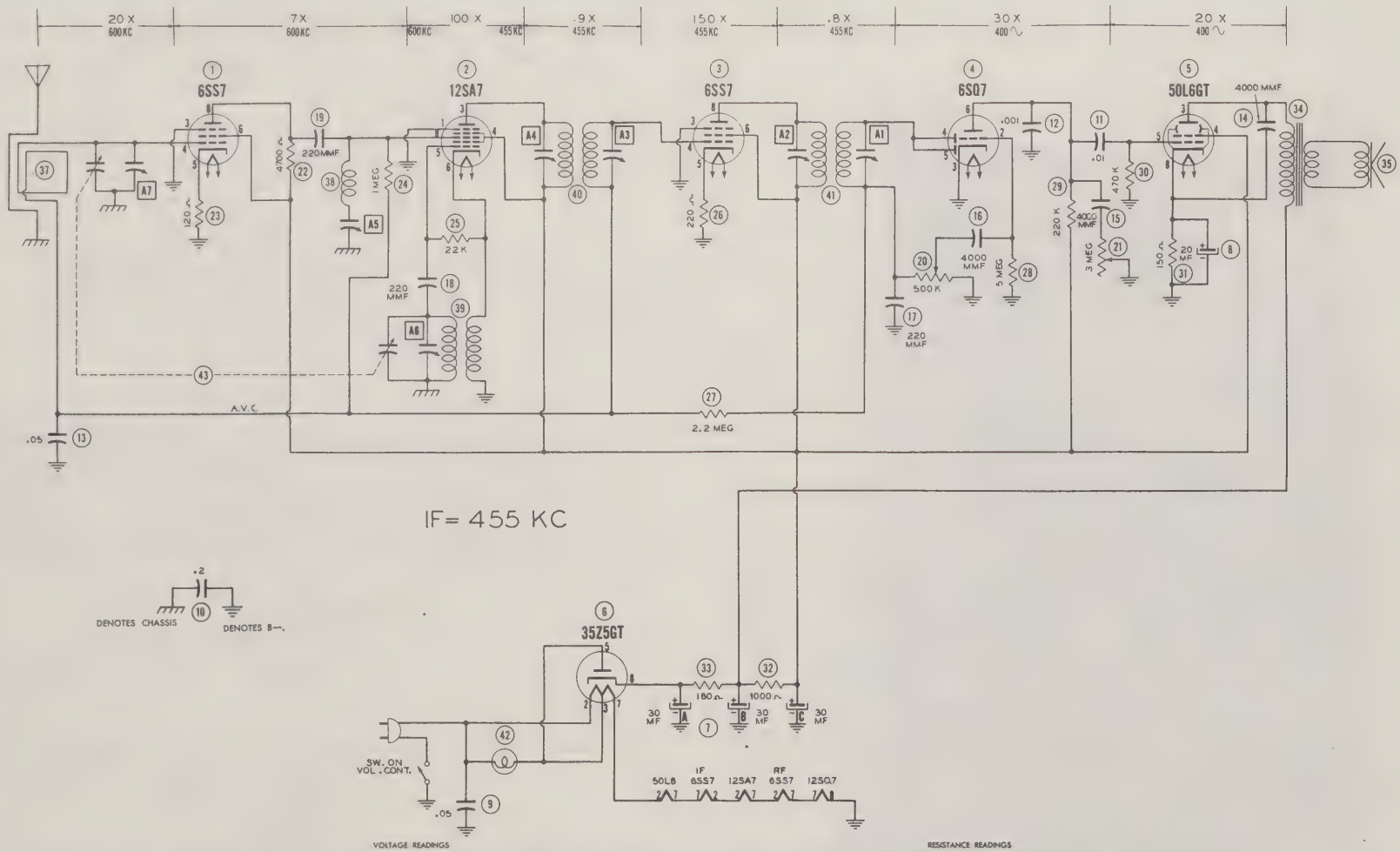
MISCELLANEOUS

ITEM No.	PART NAME	PACKARD-BELL PART No.	NOTES
43	2 Gang Var. Cap.		(25-456MMF, 31-200MMF)



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SS7	0V.	19VAC	0V.	-.1VDC	.9VDC	95VDC	12VAC	70VDC
2	12SA7	0V.	32VAC	85VDC	85VAC	-3.4VDC	0V.	19VAC	-.2VDC
3	6SS7	0V.	32VAC	0V.	0V.	1.3VDC	85VDC	85VAC	85VDC
4	12SQ7	0V.	-.3VDC	0V.	-.4VDC	-.4VDC	85VDC	12VAC	0V.
5	50L6GT	0V.	90VAC	105VDC	85VDC	0V.	0V.	39VAC	5.7VDC
6	35Z5GT	0V.	117VAC	112VAC	0V.	112VAC	85VDC	90VAC	120VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SS7	INF.	19Ω	0Ω	2.7 Meg.	120Ω	150KΩ	12Ω	150KΩ
2	12SA7	INF.	3Ω	150KΩ	150KΩ	22KΩ	.8Ω	19Ω	3.7 Meg.
3	6SS7	INF.	3Ω	0Ω	2.7 Meg.	220Ω	150KΩ	40Ω	150KΩ
4	12SQ7	INF.	5 Meg.	0Ω	500KΩ	500KΩ	370KΩ	12Ω	0Ω
5	50L6GT	INF.	90Ω	150KΩ	150KΩ	470KΩ	500KΩ	40Ω	150Ω
6	35Z5GT	INF.	120Ω	115Ω	INF.	115Ω	150KΩ	90Ω	150KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1949

492-16

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHILCO MODEL
49-504, 49-504-I

PHILCO MODEL
49-504, 49-504-I

PHILCO MODEL 49-504

TRADE NAME	Philco, Models 49-504, 49-504-I
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 7A8 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .22 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 7A8. Low side to B-.	455KC	Tuning cap. fully closed.	Across voice coil	A1,A2, A3,A4	Turn A3 completely clockwise. Then adjust A1 thru A4 in order given, for maximum output
2		Connect loop in cabinet to receiver. Connect sig. gen. to radiation loop.	1600KC	Tuning cap. fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		Loop	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."

"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-17 SET #54-FOLDER #17

PARTS LIST AND DESCRIPTIONS

PHILCO MODELS
49-504, 49-504-I

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
1	Converter	7A8	7A8	8U	
2	IF Amplifier	14A7	14A7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Z5	35Z5	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
6A	30	150	30-2573	PRSA150/20-30	EZ42215	DSB403020-150	D10095	Filter-Orange
B	25	150		PRS150/24			" -Blue	
C	20	150						Decoupling-Red
7	.04	400	45-3500-1	484-05	DT4S4	ST-6-04	TC-14	Line Filter
8	.2	400					72P3	Line Isolation
9	.02	400	61-0108	484-02	DT4S2	ST-4-02	TC-12	Output Plate Bypass
10	.01	400	61-0120	484-01	DT4S1	ST-4-01	TC-11	Audio Coupling
11	.01	400	61-0120	484-01	DT4S1	ST-4-01	TC-11	" "
12	.05	200	61-0122	484-05	DT2S5	ST-4-05	TC-15	AVC Filter
13	.05	200	61-0122	484-05	DT2S5	ST-4-05	TC-15	Screen Bypass
14	220	300	62-122001001	1468-0002	5W5T2	MO.5-32	1FM-32	Output Grid Bypass-Cer.
15	47	500	60-00515307	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.
16	5	300	60-90505007	1468-000005	5W5V5	MO.5-55	MS-55	Ext. Ant. Coupling-Cer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	500KΩ	½	45-5019	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	41	SW-A	" " " " "

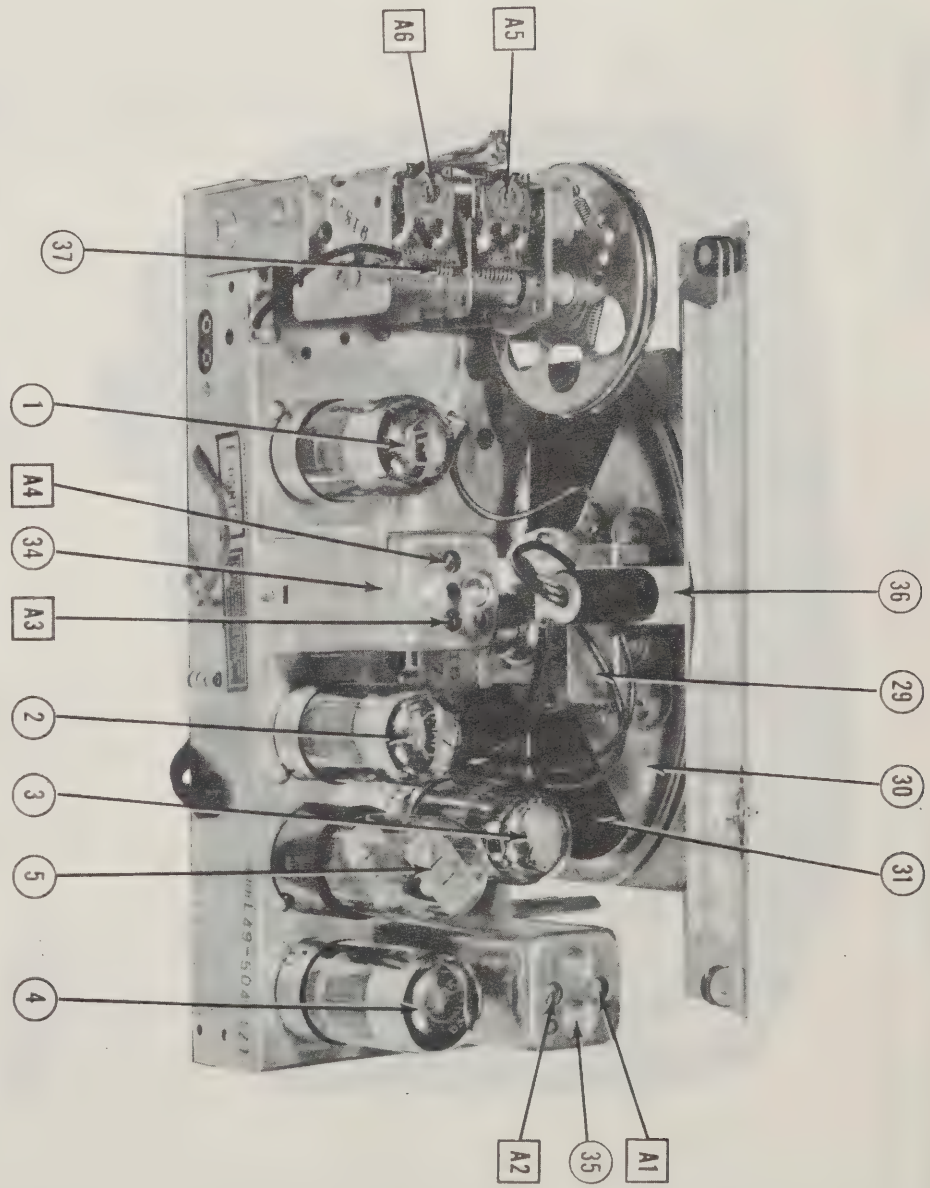
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
18	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Antenna Loading
19	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Osc. Grid
20	27KΩ	½	66-3273340	BTS-27K	Red-Vi.-Or. Screen Dropping
21	3.3 Meg.	½	66-5333340	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
22	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
23	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Output Grid
24	130Ω	½	66-1123340	BW-½-150	Br.-Or.-Br. Output Cathode
25	1200Ω	½	66-2123340	BTS-1200	Br.-Red-Red Filter
26	220Ω	1	66-1224340	BW-1-220	Red-Red-Br. "
27	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Line Isolation
28	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
29	2000Ω	3.4Ω	180Ω	.7Ω	Part of 36-1615	A-3876	T22S45	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PHILCO PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.				
30	PM	3.4Ω	36-1615		46A07	
	CONE DIA.	VC DIA.				
31	4"x6"	9/16"				

R F COILS

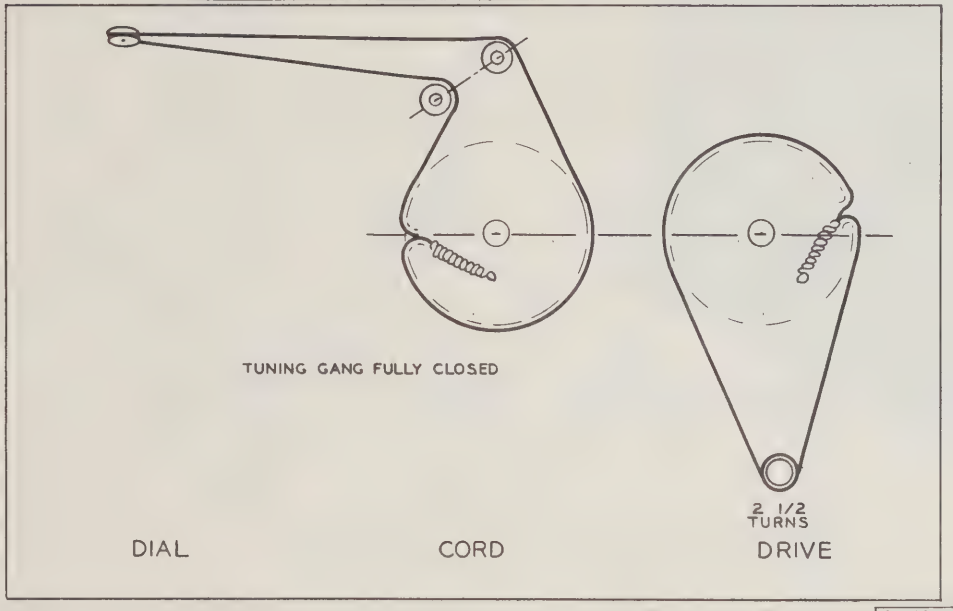
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MEISSNER PART No.
32	Loop Ant.		3.5Ω	32-4052-4	
33	Osc. Coil	2.6Ω	7.5Ω	32-4263	
34	Input IF	25Ω	25Ω	32-3968	16-6658
35	Output IF	22Ω		45-6365	16-6670

DIAL LIGHT

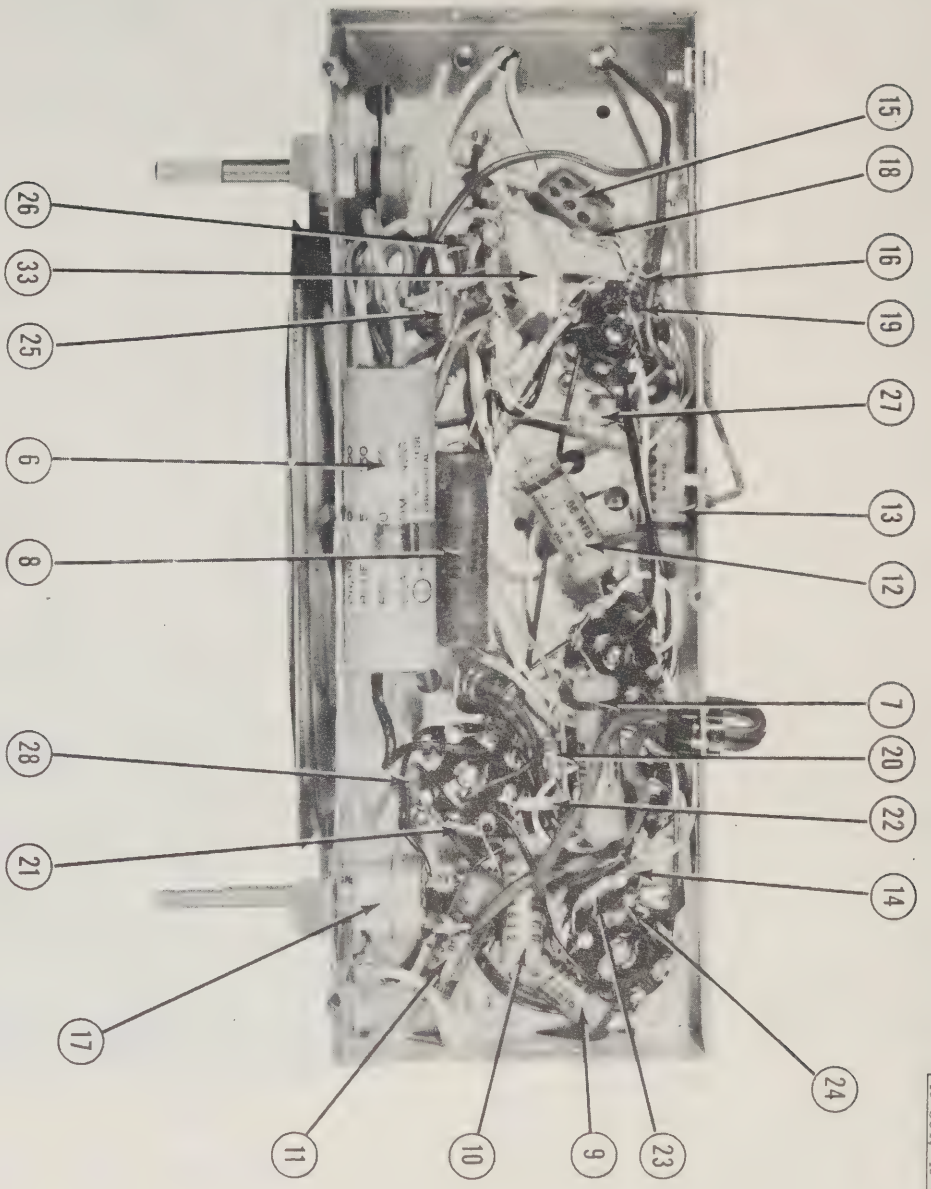
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		INSTALLATION NOTES
36	Bayonet	6-8	0.15A	Brown	34-2068		Type 47

MISCELLANEOUS

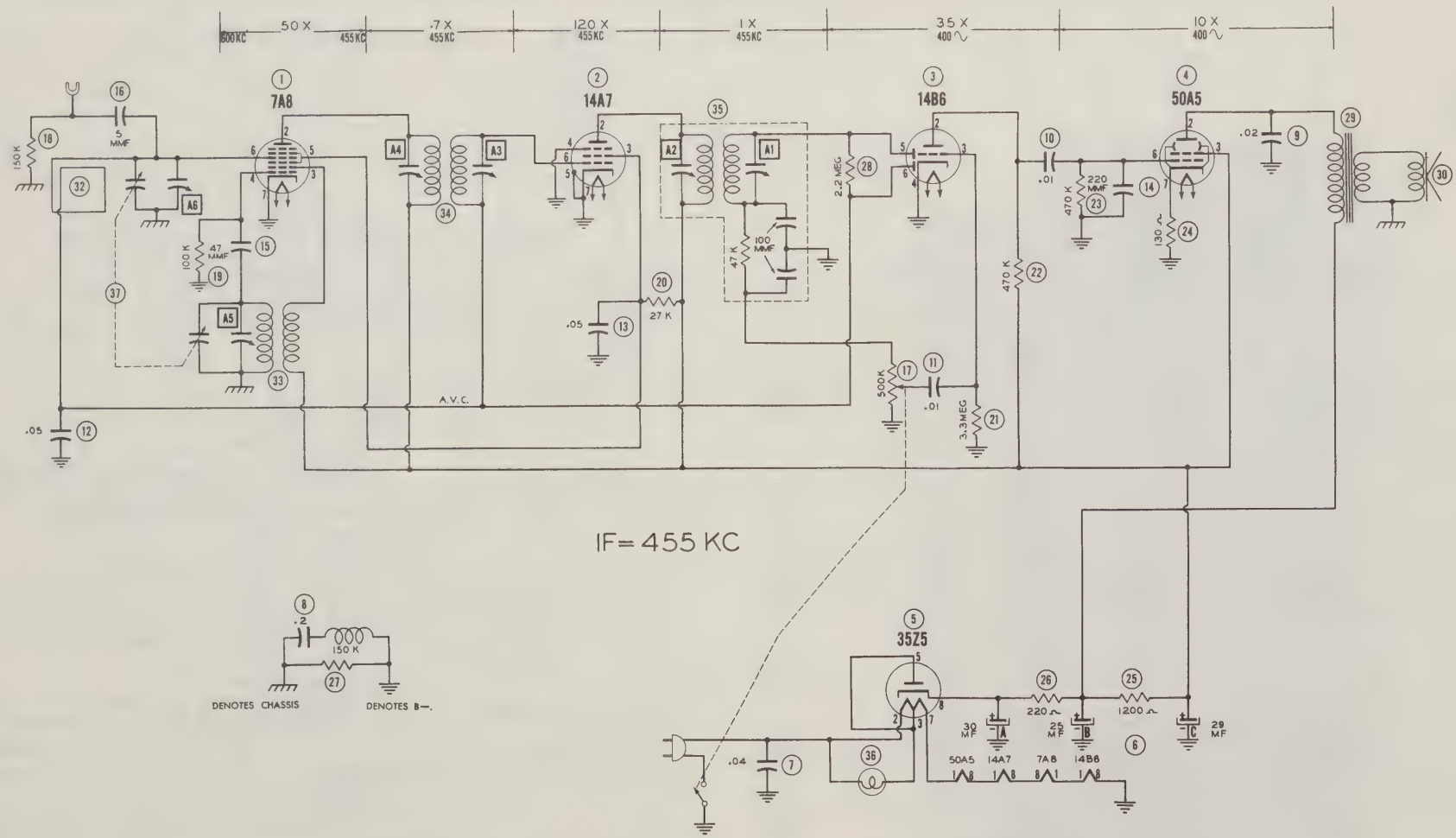
ITEM No.	PART NAME	PHILCO PART No.	NOTES
37	2 Gang Var. Cap.	31-2527-2	(18-496MMF, 20-175MMF)
	Cabinet	10524P	Model 49-504
	"	10524R	Model 49-504-I
	Knob Assembly	54-4052	Model 49-504
	" "	27-4805	Model 49-504-I
	Dial Scale	27-5907	Model 49-504
	" "	27-5908	Model 49-504-I
	Dial Pointer	56-2076-1	



CHASSIS—BOTTOM VIEW



PHILCO MODELS 49-504, 49-504-I



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	13VAC	95VDC	95VDC	-7.4VDC§	40VDC	-.6VDC	0V.	19VAC
2	14A7	32VAC	95VDC	40VDC	0V.	0V.	-.6VDC	0V.	19VAC
3	14B6	13VAC	50VDC	-.6VDC	0V.	-.6VDC	-.6VDC	0V.	0V.
4	50A5	85VAC	100VDC	95VDC	0V.	0V.	0V.	7VDC	32VAC
5	35Z5	0V.	117VAC	110VAC	95VDC	110VAC	0V.	85VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	13Ω	90KΩ	90KΩ	100KΩ	120KΩ	2.8 Meg.	0Ω	21Ω
2	14A7	32Ω	90KΩ	120KΩ	0Ω	0Ω	2.8 Meg.	0Ω	21Ω
3	14B6	13Ω	560KΩ	3.3 Meg.	0Ω	550KΩ	2.8 Meg.	0Ω	0Ω
4	50A5	90Ω	90KΩ	90KΩ	INF.	INF.	470KΩ	130Ω	32Ω
5	35Z5	0Ω	120Ω	110Ω	90KΩ	110Ω	INF.	90Ω	90KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1949

492-17

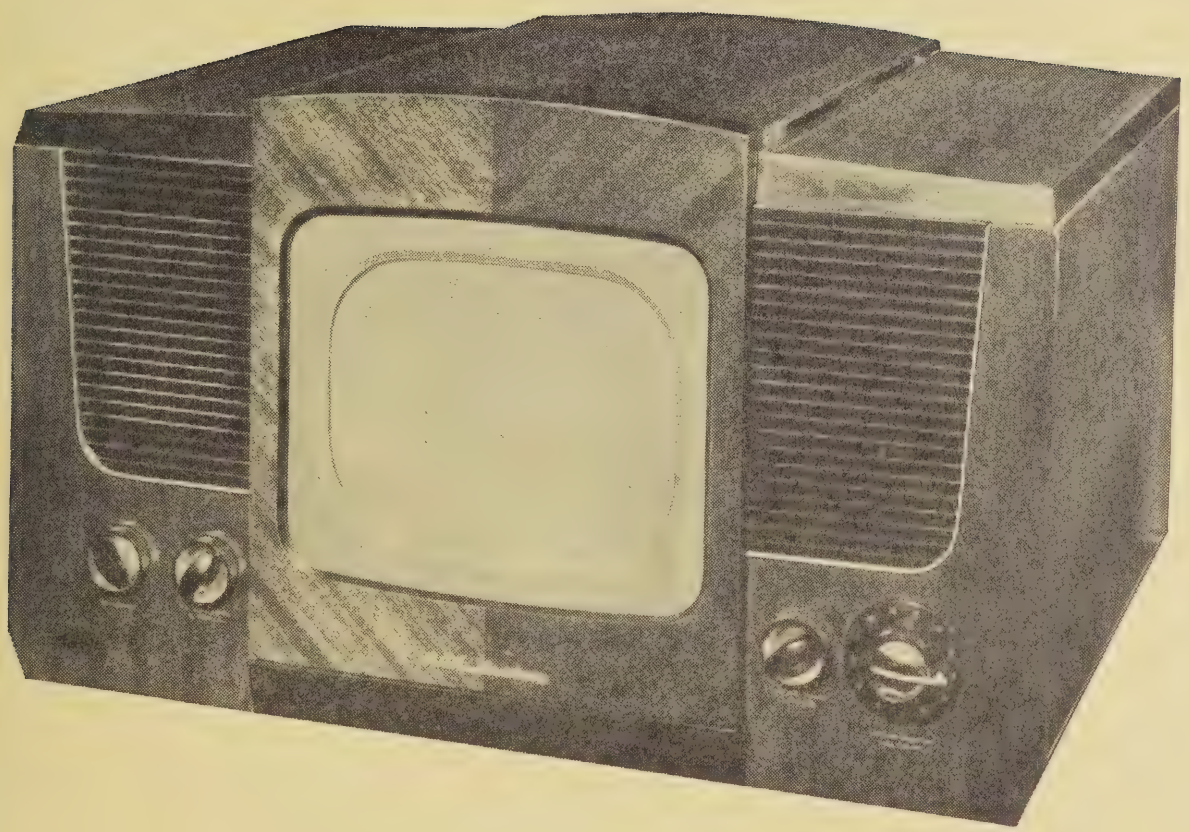
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

RCA MODELS
630TS, 630TCS, 8TS30



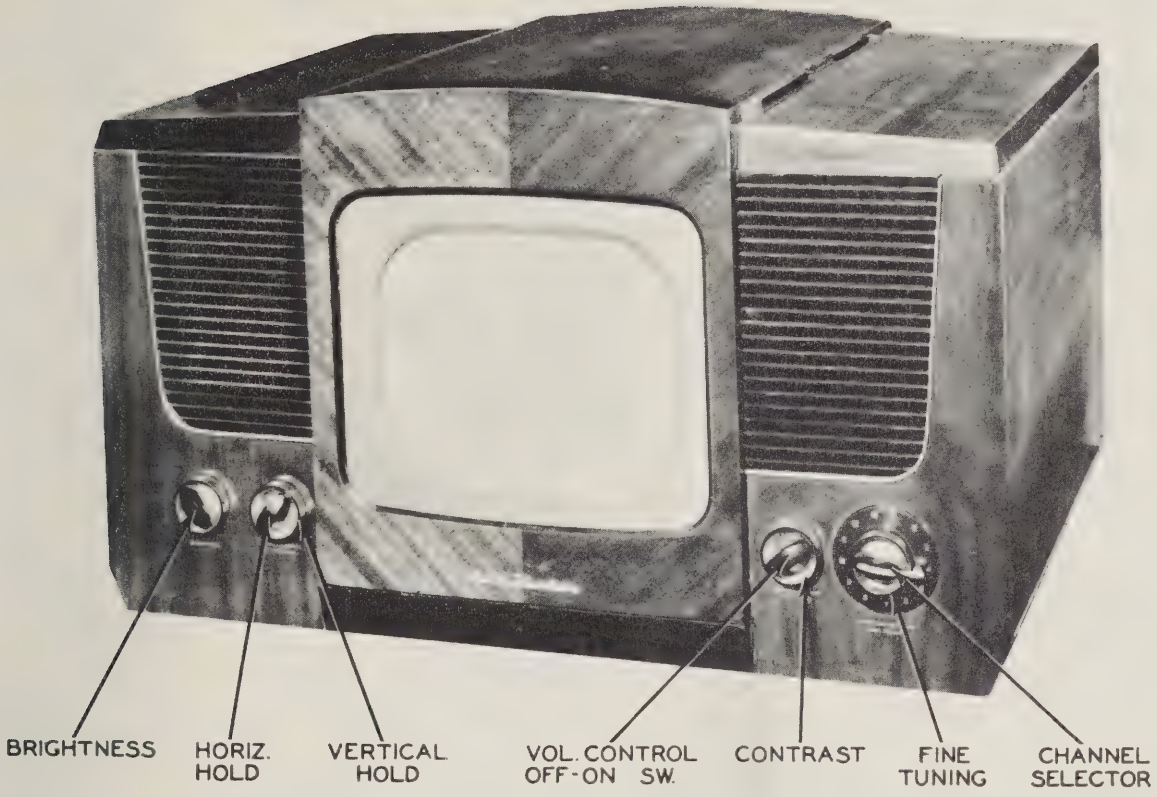
RCA MODELS
630TS, 630TCS, 8TS30

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U.S.A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."

Printed in U. S. of America

Date 1/49—No. 492-18 Set No. 54—Folder No. 18



RCA MODELS 630TS, 630CTS, 8TS30

RCA MODELS 630TS.

RCA (VICTOR) MODEL 8TS30

TRADE NAME	RCA, Models 630TS, 630TCS, 8TS30
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N. J.
TYPE SET	Television Receiver
TUBES	Thirty
POWER SUPPLY	115 Volts 60 Cycle AC — RATING 2.5 Amps. @ 117 Volts AC
TUNING RANGE—	Channels 1 through 13

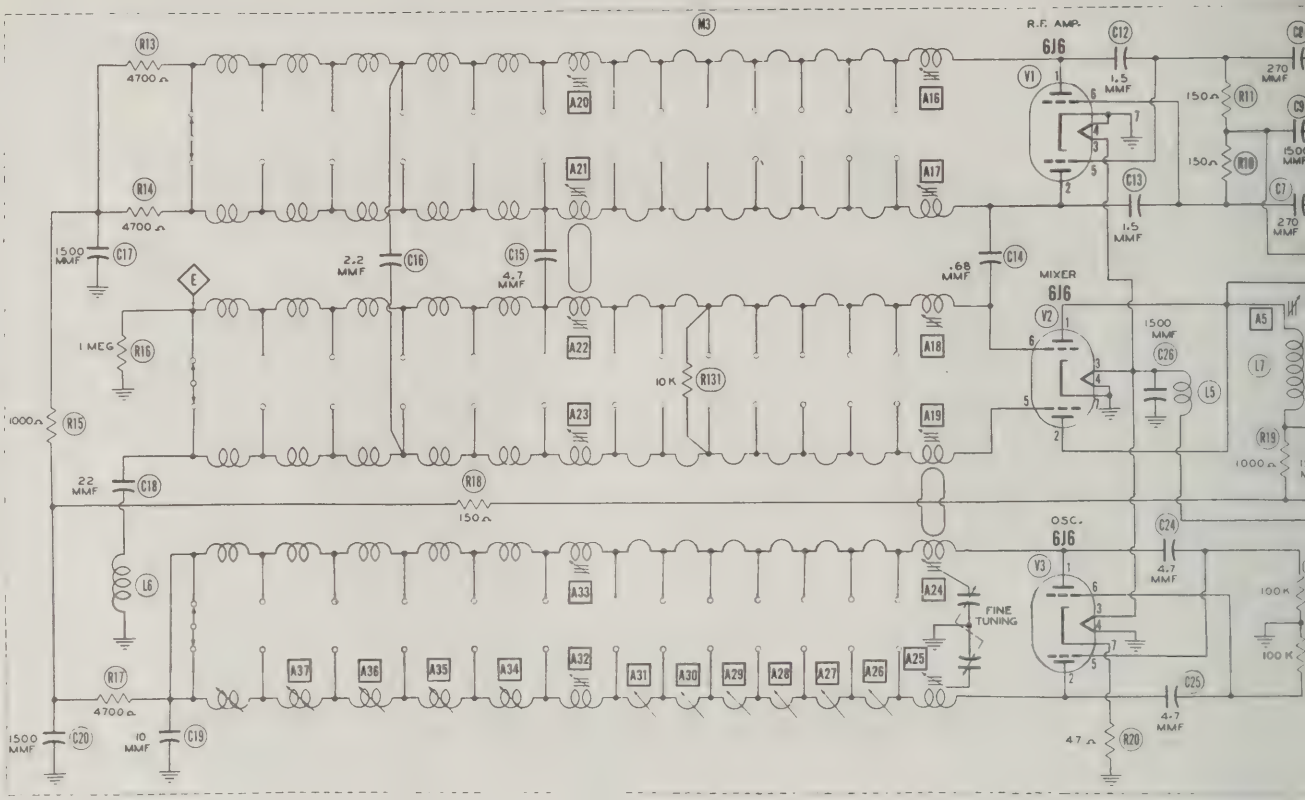
TABLE OF CONTENTS

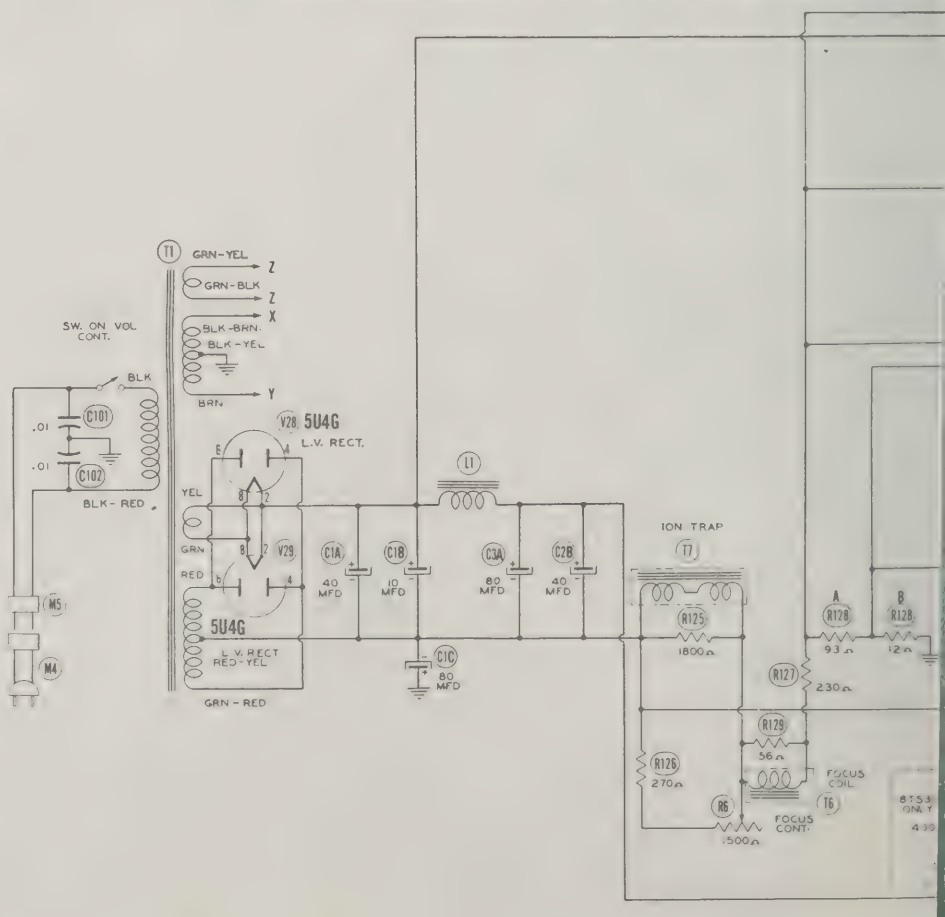
	Page		Page
Schematic	2	Voltage and Resistance Measurements	14
Chassis, Top View	3	Tube Replacement Chart	15
Parts List and Description	5,8,11	Chassis, Bottom View, Capacitor Identification	12,17
Alignment Instructions	6,7	Block Diagram	18
Chassis, Bottom View, Trans., Inductor, Alignment Identification	4,9	Disassembly Instructions	19
RF Tuner, Right Side	10	Horizontal Oscillator Alignment	19
RF Tuner, Left Side	10	Horizontal Linearity Adjustment	19
Chassis, Bottom View, Resistor Identification	13,16	RF Oscillator Alignment Points	20
		Cabinet Rear View	20

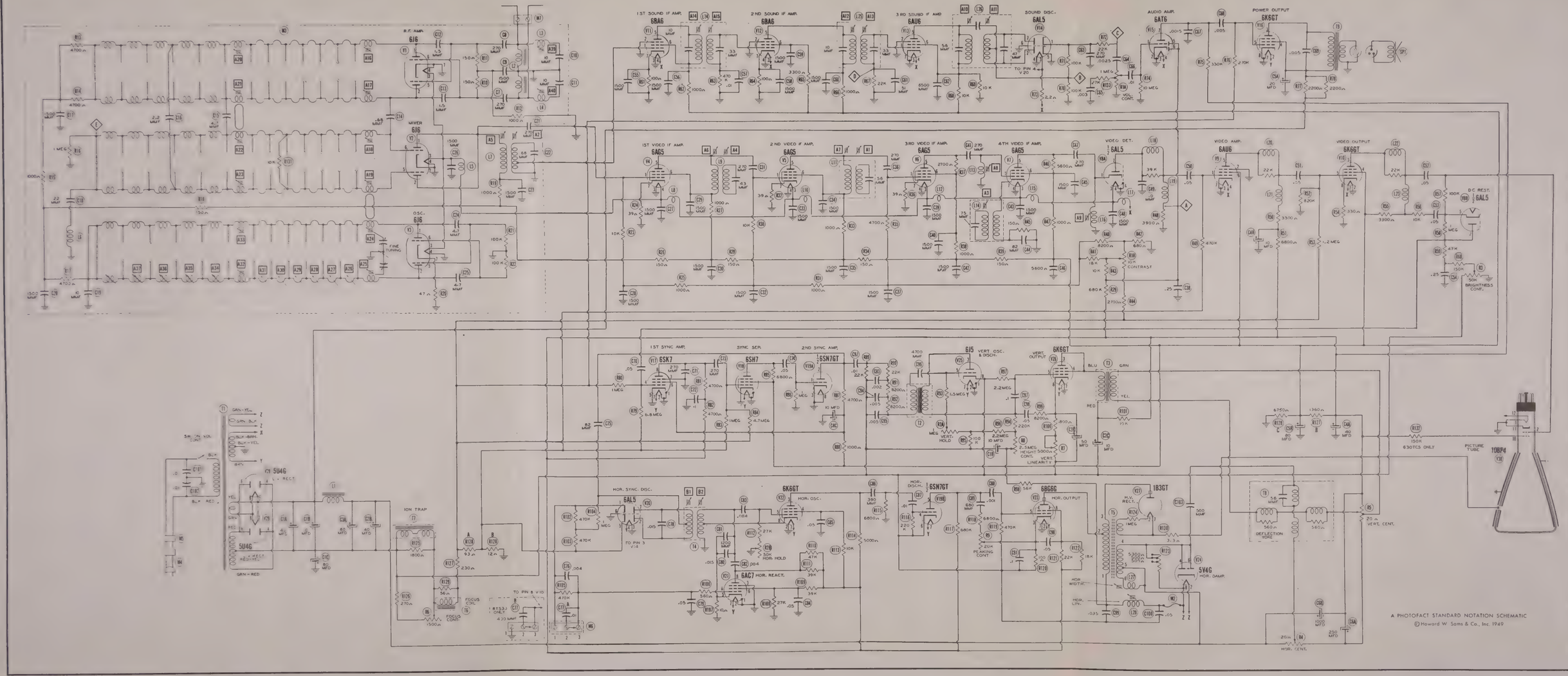
HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-18 SET #54-FOLDER #18


R.F. AMP.
6J6
MIXER
6J6
OSC.
6J6
FINE TUNING
4700Ω
1500 MMF
2.2 MMF
4.7 MMF
.68 MMF
1.5 MMF
270 MMF
1 MEG
10K
1000Ω
150Ω
22 MMF
10 MMF
47Ω


GRN-YEL
GRN-BLK
BLK-BRN.
BLK-YEL
BRN
SW. ON VOL CONT.
BLK
BLK-RED
.01
.01
5U4G
L.V. RECT.
YEL
GRN
RED
5U4G
L.V. RECT
RED-YEL
GRN-RED
40 MFD
10 MFD
80 MFD
40 MFD
80 MFD
ION TRAP
1800Ω
93Ω
12Ω
230Ω
56Ω
270Ω
1500Ω
FOCUS COIL
FOCUS CONT.

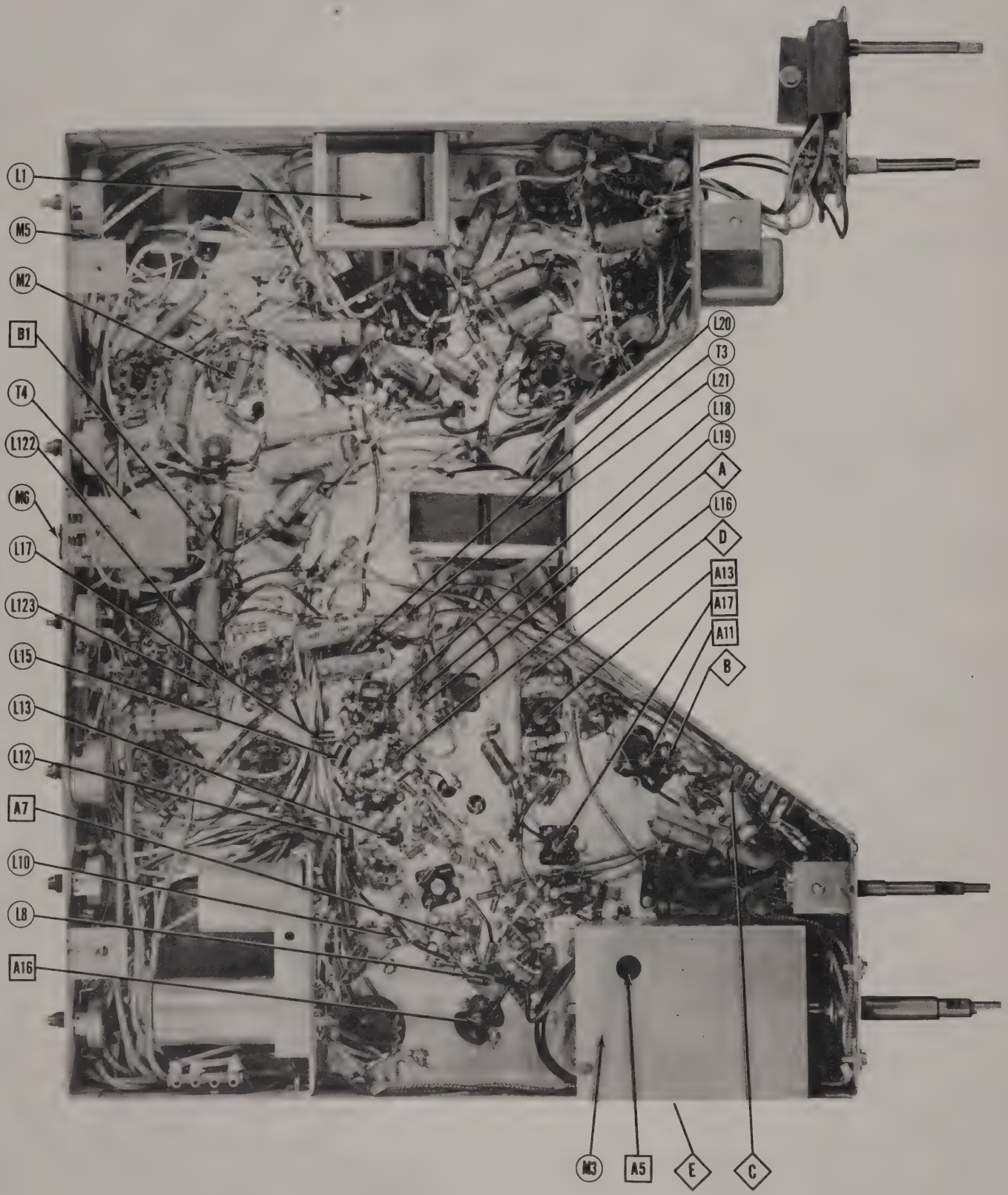


A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1949

RCA MODELS 630TS, 630CTS, 8TS30

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6J6	6J6	7BF	
V3	Oscillator	6J6	6J6	7BF	
V4	1st V. IF Amp.	6AG5	6AG5	7BD	
V5	2nd V. IF Amp.	6AG5	6AG5	7BD	
V6	3rd V. IF Amp.	6AG5	6AG5	7BD	
V7	4th V. IF Amp.	6AG5	6AG5	7BD	
V8	Video Det., DC Res.	6AL5	6AL5	6BT	
V9	Video Amp.	6AU6	6AU6	7BK	
V10	Video Output	6K6GT	6K6GT	7S	
V11	1st S. IF Amp.	6BA6	6BA6	7BK	
V12	2nd S. IF Amp.	6BA6	6BA6	7BK	
V13	3rd S. IF Amp.	6AU6	6AU6	7BK	
V14	Sound Disc.	6AL5	6AL5	6BT	
V15	Audio Amp.	6AT6	6AT6	7BT	
V16	Power Output	6K6GT	6K6GT	7S	
V17	1st Sync. Amp.	6SK7	6SK7	8N	
V18	Sync. Sep.	6SH7	6SH7	8BK	
V19	2nd Sync. Amp., Hor. Dis.	6SN7GT	6SN7GT	8BD	
V20	Hor. Sync. Disc	6AL5	6AL5	6BT	
V21	Hor. React.	6AC7	6AC7	8N	
V22	Hor. Osc.	6K6GT	6K6GT	7S	
V23	Hor. Output	6BG6-G	6BG6-G	5BT	
V24	Hor. Damper	5V4G	5V4G	5L	
V25	Vert. Osc., Discharge	6J5	6J5	6Q	
V26	Vert. Output	6K6GT	6K6GT	7S	
V27	H.V. Rect.	1B3GT	1B3GT	3C	
V28	L.V. Rect.	5U4G	5U4G	5T	
V29	L.V. Rect.	5U4G	5U4G	5T	
V30	Picture Tube	10BP4	10BP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	71431		UP9C729-3		D14367	◓ Filter
B	10	450						■ "
C	80	150						▲ Bias Filter
C2A	40	450	71432		UP9C897-3		D14648	◓ Filter
B	40	450						■ "
C	10	450						▲ Vert. Out. Plate Decoup
C3A	80	450	71433		UP9B730-3		D14369	◓ Filter
B	50	50						▲ Vert. Out. Cath.
C4A	40	450	71434		UP9C731-1		D14370	◓ Filter
B	10	450						■ Low Pass Filter
C	10	350						▲ 2nd Sync. Amp. Plate
C5A	20	450	71435		UP9B337-1		D14371	◓ Audio Out. Screen
B	80	350						▲ Filter
C6A	250	10	71436		UP7B808-4		D14338	■ "
B	1000	6						▲ "
C7	270		71540					Ant. Coupling -Cer.
C8	270		71540					" " "
C9	1500		71501					RF Bypass "
C10	10							Fixed Trimmer "
C11	10							" " "
C12	1.5		71500					RF Neutralizer "
C13	1.5		71500					" " "
C14	.68		71504					RF Coupling "
C15	4.7		71520					" " "
C16	2.2		71502					" " "
C17	1500		71501					RF Decoupling "
C18	270		71540					RF Bypass "
C19	10							RF Decoupling "
C20	1500		71501					" " "
C21	270	500	65401					IF Coupling
C22	68							Fixed Trimmer "
C23	1500		71501					Mixer Decoupling "
C24	4.7		71520					Osc. Feedback "
C25	4.7		71520					" " "
C26	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	Fil. Bypass "
C27	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	" " "
C28	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	Bias Filter "
C29	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	1st V. IF Decoup. "
C30	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	RF Bypass "
C31	270	500	65401	1468-0003	5W5T3	MO.5-33		Video IF Coupling
C32	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	Bias Filter "
C33	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	2nd V. IF Fil. Byp. "
C34	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	2nd V. IF Decoup. "
C35	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	RF Bypass "
C36	270	500	65401	1468-0003	5W5T3	MO.5-33		Video IF Coup.
C37	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	Bias Filter
C38	.25	400	70618	484-.25	DT4P25	ST-4-25	TC-2	" "
C39	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	3rd V. IF Fil. Byp. "
C40	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	3rd V. IF Decoup. "
C41	270	500	65401	1468-0003	5W5T3	MO.5-33		Video IF Coupling
C42	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	RF Bypass "
C43	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	4th V. IF Fil. Byp. "
C44	82		71514					4th V. IF Cath. "
C45	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	4th V. IF Decoup. "
C46	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	RF Bypass "
C47	270	500	65401	1468-0003	5W5T3	MO.5-33		Video Coupling
C48	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	Video Det. Fil. Byp. "
C49	10	500	39604	1468-00001	5W5Q1	MO.5-41		RF Filter
C50	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	Video Coupling
C51	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	" "
C52	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	" "
C53	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	" "
C54	.25	400	70618	484-.25	DT4P25	ST-4-25	TC-2	Bias Filter
C55	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	1st S. IF Cath. Byp. "
C56	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	1st S. IF Decoup. "
C57	.01	400	70610	484-01	DT4S1	ST-4-01	TM-11	2nd S. IF Grid Filter
C58	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	2nd S. IF Cath. Byp. "
C59	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	2nd S. IF Screen Byp. "
C60	1500		71501	1467-0015	1W5D15	MW.5-215	1FM-215	2nd S. IF Plate Decoup. "
C61	51		71771					3rd S. IF Grid Filter "
C62	6500		71690					3rd S. IF Decoup.
C63	270	500	65401	1468-0003	5W5T3	MO.5-33		De-emphasis
C64	.0025	400	70602					Audio Coupling
C65	.01	400	70610	484-01	DT4S1	ST-4-01	TM-11	Tone Compensation*
C66	.01	400	70610	484-01	DT4S1	ST-4-01	TM-11	Audio Coupling
C67	.0025	400	70602					Audio Plate Byp.†
C68	.005	400	70606	484-005	DT6D5	ST-6-005	TM-25	Audio Coupling
C69	.005	400	70606	484-005	DT6D5	ST-6-005	TM-25	Output Plate Bypass
C70	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	Sync. Coupling
C71	270	500	39633	1468-0003	5W5T3	MO.5-33		1st Sync. Amp. Plate
C72	.1	400	70617	484-.1	DT4P1	ST-4-1	TM-1	1st Sync. Amp. Plate Decoup.
C73	270	500	39638	1468-0003	5W5T3	MO.5-33		Sync. Coupling
C74	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	" "
C75	82	500	39626					Hor. Sync. Coupling
C76	.004	1000	70647	1084-004			PX-241	AFC Filter
C77	.01	400	70610	484-01	DT4S1	ST-4-01	TM-11	" " ‡
C78	.015	400	71516					Fixed Trimmer
C79	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	AFC Filter
C80	.015	400	71516					Phase Shifter
C81	1200		72638					" " "
C82	.004	400	70605	484-004	DT6D4	ST-6-004	TM-24	AFC Coupling
C83	.004	400	70605	484-004	DT6D4	ST-6-004	TM-24	Hor. Sync. Coupling
C84	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	H. Osc. Contr. Screen*
C85	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	Hor. Osc. Screen
C86	390	500	39642	1468-0004	5W5T4	MO.5-34	1FM-34	Differentiating Net.
C87	.01	400	70610	484-01	DT4S1	ST-4-01	TM-11	Hor. Sync. Coupling
C88	.001	400	70600	484-001	DT6D1	ST-6-001	TM-21	" " "
C89	680	500	39648					Hor. Discharge
C90	.05	400	70615	484-05	DT4S5	ST-4-05	TM-15	Hor. Output Screen
C91	.1	400	70617	484-.1	DT4P1	ST-4-1	TM-1	Hor. Output Cathode
C92	.01	400	70610	484-01	DT4S1	ST-4-01	TM-11	Vert. Sync. Coupling
C93	.002	400	70601	484-002	DT6D2	ST-6-002	TM-22	Integrating Net.
C94	.005	400	70606	484-005	DT6D5	ST-6-005	TM-25	" "
C95	.005	400	70606	484-005	DT6D5	ST-6-005	TM-25	" "
C96	4700	500	39668	1467-005		MW.5-25	1FM-25	Vert. Osc. Grid
C97	.1	400	70617	484-.1	DT4P1	ST-4-1	TM-1	Vert. Coupling
C98	.05	600	71515	684-05	DT6S5	ST-6-05	TM-15	Vert. Discharge
C99	.035	600	71518					Damper Filter
C100	.05	600	71515	684-05	DT6S5	ST-6-05	TM-15	" "
C101	.01	400	71770	484-01	DT4S1	MPH-6-01	TM-11	Line Filter
C102	.01	400	71770	484-01	DT4S1	MPH-6-01	TM-11	" "
C103	500		71450					H. V. Filter T.O.

*May be .003 in some models.
†May be .0015 in some models.
‡May be 400 MMF. in some models.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R1A	1 Meg.	½	71446			Volume-Tapped @ 200KΩ
B	& 10KΩ	½				Contrast Dual Control
C	Switch					On-Off Switch-SPST
R2A	1 Meg.	½	71445			Vertical Hold Dual Control
B	& 50KΩ	½				Horizontal Hold
R3A	50KΩ	½	71444	M-44-8	D11-123	Brightness
B	Shaft			Not Req.	A	Attach to R3A per instructions
R4	20Ω	2	71443	43-20	W-20	Horiz. Centering-Center Tap Not Used
R5	20Ω	2	71443	43-20CT	W20X10	Vert. Centering-Tapped @ 10Ω
R6	1500Ω	4	71442			Focus
R7A	5000Ω	½	71441	AM-19-8	D11-114	Vert. Linearity
B	Shaft			KSS-3	E	Attach to R7A per instructions
R8	2.5 Meg.	½	71440			Height
R9A	20KΩ	½	71447	AM-40-8	D11-120	Peaking
B	Shaft			KSS-3	E	Attach to R9A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% TOLERANCE UNLESS OTHERWISE STATED		
R10	150Ω	½	30680		Br.-Grn.-Br.	RF Amp. Grid	±20%
R11	150Ω	½	30680		Br.-Grn.-Br.	" "	±20%
R12	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	Bias Network	±20%
R13	4700Ω	½	30494	BTS-4700	Yl.-Vi.-Red	RF Amp. Plate	±20%
R14	4700Ω	½	30494	BTS-4700	Yl.-Vi.-Red	" " "	±20%
R15	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	RF Amp. Plate Decoupling	±20%
R16	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn.	Mixer Grid	±20%
R17	4700Ω	½	30494	BTS-4700	Yl.-Vi.-Red	Osc. Plate	±20%
R18	150Ω	½	30680		Br.-Grn.-Br.	Decoupling	±20%
R19	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	Conv. Plate Decoupling-Note 1	±20%
R20	47Ω	½	30732		Yl.-Vi.-Blk.	Osc. Cathode	±20%
R21	100KΩ	½	3252	BTS-100K	Br.-Blk.-Yl.	Osc. Grid	±20%
R22	100KΩ	½	3252	BTS-100K	Br.-Blk.-Yl.	Osc. Grid	±20%
R23	10KΩ	½	3078	BTS-10K ±5%	Br.-Blk.-Or.	1st Video IF Grid	±5%
R24	39Ω	½	11956		Or.-Wh.-Blk.	1st Video IF Cathode	
R25	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	IF Contrast Bias Network	±20%
R26	150Ω	½	30680		Br.-Grn.-Br.	Decoupling	
R27	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	"	±20%
R28	150Ω	½	30680		Br.-Grn.-Br.	"	
R29	680KΩ	½	30562	BTS-680K ±5%	Blue-Gray-Yl.	Voltage Dropping	±5%
R30	10KΩ	½	3078	BTS-10K ±5%	Br.-Blk.-Or.	2nd Video IF Grid	±5%
R31	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	IF Contrast Bias Network	±20%
R32	39Ω	½	11956		Or.-Wh.-Blk.	2nd Video IF Cathode	
R33	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	Decoupling	±20%
R34	150Ω	½	30680		Br.-Grn.-Br.	"	
R35	4700Ω	½	30494	BTS-4700 ±5%	Yl.-Vi.-Red	3rd Video IF Grid	±5%
R36	39Ω	½	11956		Or.-Wh.-Blk.	3rd Video IF Cathode	
R37	2700Ω	½	30730	BTS-2700 ±5%	Red-Vi.-Red	3rd Video IF Plate	±5%
R38	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	Decoupling	±20%
R39	150Ω	½	30680		Br.-Grn.-Br.	"	
R40	8200Ω	½	14250	BTS-8200	Gray-Red-Red	Contrast Bias Network	
R41	18KΩ	½	3219	BTS-18K	Br.-Gray-Or.	" " "	
R42	680Ω	½	12282	BTS-680	Blue-Gray-Br.	" " "	
R43	10KΩ	½	3078	BTS-10K	Br.-Blk.-Or.	" " "	
R44	2700Ω	½	30730	BTS-2700	Red-Vi.-Red	" " "	
R45	150Ω	½	30880		Br.-Grn.-Br.	4th Video IF Cathode	
R46	5600Ω	½	30734	BTS-5600 ±5%	Grn.-Blue-Red	4th Video IF Plate	±5%
R47	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	Decoupling	±20%
R48	3900Ω	½	30694	BTS-3900 ±5%	Or.-Wh.-Red	Diode Load	±5%
R49	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl.	1st Video Amp. Grid	±20%
R50	3300Ω	½	30733	BTS-3300	Or.-Or.-Red	1st Video Amp. Plate	
R51	6800Ω	½	14659	BTS-6800	Blue-Gray-Red	" " "	
R52	820KΩ	½	30161	BTS-820K ±5%	Gray-Red-Yl.	2nd Video Amp. Grid	±5%
R53	1.2 Meg.	½	30162	BTS-1.2 Meg. ±5%	Br.-Red-Grn.	Bias Network	±5%
R54	330Ω	1	8063		Or.-Or.-Br.	2nd Video Amp. Cathode	
R55	3300Ω	1	71986	BTA-3300	Or.-Or.-Red	Voltage Dropping	
R56	10KΩ	½	3078	BTS-10K	Br.-Blk.-Or.	Sync. Isolation	
R57	100KΩ	½	3252	BTS-100K	Br.-Blk.-Yl.	Picture Tube Grid	±20%
R58	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn.	Diode Load	±20%
R59	47KΩ	½	30787	BTS-47K	Yl.-Vi.-Or.	Bias Network	
R60	150KΩ	½	30493	BTS-150K	Br.-Grn.-Yl.	" "	
R61	100Ω	½	34765		Br.-Blk.-Br.	1st Sound IF Cathode	±20%
R62	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	1st Sound IF Decoupling	±20%
R63	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl.	2nd Sound IF Grid	±20%
R64	100Ω	½	34765		Br.-Blk.-Br.	2nd Sound IF Cathode	±20%
R65	3300Ω	½	30733	BTS-3300	Or.-Or.-Red	2nd Sound IF Screen	±20%
R66	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	2nd Sound IF Plate	±20%
R67	22KΩ	½	30492	BTS-22K	Red-Red-Or.	3rd Sound IF Grid	
R68	10KΩ	1	71914	BTA-10K	Br.-Blk.-Or.	Voltage Dropping	
R69	10KΩ	½	3078	BTS-10K	Br.-Blk.-Or.	Bleeder	
R70	100KΩ	½	3252	LTS-100K	Br.-Blk.-Yl.	Diode Load	
R71	100KΩ	½	3252	BTS-100K	Br.-Blk.-Yl.	" "	
R72	22KΩ	½	30492	BTS-22K	Red-Red-Or.	De-emphasis	±20%
R73	2.2Ω	1	71918	BW-½-2.2		Filament Dropping	
R74	10 Meg.	½	30992	BTS-10 Meg.	Br.-Blk.-Blue	1st Audio Grid	±20%
R75	330KΩ	½	14983	BTS-330K	Or.-Or.-Yl.	1st Audio Plate	±20%
R76	270KΩ	½	30651	BTS-270K	Red-Vi.-Yl.	Audio Output Grid	
R77	2200Ω	2	34769	BT-2-2200	Red-Red-Red	Filter	±20%
R78	2200Ω	2	34769	BT-2-2200	Red-Red-Red	"	±20%
R79	6.8 Meg.	½	31071	BTS-6.8 Meg.	BLue-Gray-Grn.	Bias Network	
R80	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn.	1st Sync. Amp. Grid	±20%
R81	4700Ω	1	71987	BTA-4700	Yl.-Vi.-Red	1st Sync. Amp. Plate	
R82	4700Ω	1	71987	BTA-4700	Yl.-Vi.-Red	" " "	
R83	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn.	Sync. Sep. Grid	
R84	4.7 Meg.	½	30931	BTS-4.7 Meg.	Yl.-Vi.-Grn.	Bias Network	
R85	6800Ω	½	14659	BTS-6800	Blus-Gray-Red	1st Sync. Amp. Plate	
R86	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn.	2nd Sync. Amp. Grid	±20%
R87	4700Ω	½	30494	BTS-4700	Yl.-Vi.-Red	2nd Sync. Amp. Plate	
R88	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red	Decoupling	
R89	22KΩ	½	30492	BTS-22K	Red-Red-Or.	Differentiator	±20%
R90	22KΩ	½	30492	BTS-22K	Red-Red-Or.	Integrator	±20%
R91	8200Ω	½	14250	BTS-8200	Gray-Red-Red	"	
R92	8200Ω	½	14250	BTS-8200	Gray-Red-Red	"	
R93	1.5 Meg.	½	31449	BTS-1.5 Meg. ±5%	Br.-Grn.-Grn.	Vert. Osc. Grid	±5%
R94	220KΩ	½	14583	BTS-220K	Red-Red-Yl.	Vert. Osc. Plate	
R95	100KΩ	½	3252	BTS-100K	Br.-Blk.-Yl.	Voltage Divider	
R96	2.2 Meg.	½	30649	BTS-2.2 Meg.	Red-Red-Grn.	"	
R97	2.2 Meg.	½	30649	BTS-2.2 Meg.	Red-Red-Grn.	Vert. Output Grid	
R98	56KΩ	½	30650	BTS-56K	Grn.-Blue-Or.	Vert. Osc. Plate	
R99	8200Ω	½	14250	BTS-8200 ±5%	Gray-Red-Red	Peaking	±5%
R100	1800Ω	1	71512	BTA-1800	Br.-Gray-Red	Vert. Output Cathode-See Note 2	
R101	10KΩ	1	71914	BTA-10K	Br.-Blk.-Or.	Vert. Output Plate	±20%
R102	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl.	Diode Load	
R103	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl.	" "	
R104	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn.	" "	
R105	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl.	AFC Grid	±20%
R106	560Ω	½	5164	BTS-560	Grn.-Blue-Br.	AFC Grid Current Limiting	
R107	10Ω	1	34761		Br.-Blk.-Blk.	AFC Cathode	±5%
R108	27KΩ	1	71990	BTA-27K	Red-Vi.-Or.	Bleeder	
R109	39KΩ	1	71084	BTA-39K	Or.-Wh.-Or.	AFC Screen Dropping	
R110	47KΩ	1	71988	BTA-47K ±5%	Yl.-Vi.-Or.	AFC Plate	±5%
R111	39KΩ	1	71084	BTA-39K ±5%	Or.-Wh.-Or.	AFC Plate	±5%
R112	27KΩ	½	30409	BTS-27K	Red-Vi.-Or.	Horiz. Osc. Grid	
R113	10KΩ	1	71914	BTA-10K	Br.-Blk.-Or.	Horiz. Osc. Screen	
R114	5000Ω	5	71861	AB-5000		Horiz. Osc. Plate	
R115	6800Ω	½	14659	BTS-6800	Blue-Gray-Red	Differentiator	
R116	220KΩ	½	14583	BTS-220K	Red-Red-Yl.	Horiz. Discharge Grid	±20%
R117	680KΩ	½	30562	BTS-680K ±5%	Blue-Gray-Yl.	Horiz. Discharge Plate	±5%
R118	6800Ω	½	14659	BTS-6800	Blue-Gray-Yl.	Peaking	
R119	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl.	Horiz. Output Grid	
R120	100Ω	1	70715		Br.-Blk.-Br.	Horiz. Output Cathode	
R121	22KΩ	1	71989	BTA-22K	Red-Red-Or.	Horiz. Output Screen	
R122	18KΩ	1		BTA-18K	Br.-Gray-Or.	" "	
R123	5300Ω	20	71439			Damping-See Note 3	
R124	1 Meg.	1	71993	BTA-1 Meg.	Br.-Blk.-Grn.	Hi. Volt. Filter	
R125	1800Ω	1	71512	BTA-1800	Br.-Gray-Red	Focus Coil Shunt	
R126	270Ω	2	71511	BW-2-270	Red-Vi.-Br.	" " "	
R127A	1360Ω	17	71458			Bleeder Network	
B	230Ω	10				" " "	
R128A	6750Ω •	3.22	71459			" " "	
B	122	½				" " "	
C	933	4				" " "	
R129	56Ω	1	71992	BW-1-56	Grn.-Blue-Blk.	Ion Trap Coil Shunt	
R130	3.3Ω	½	71513	BW-½-3.3 ±5%	Or.-Or.-Gold	Hi Volt. Rect. Filament	±5%
R131	10KΩ	½		BTS-10K	Br.-Blk.-Or.	Hi Volt Rect Coil Shunt	
R132	150KΩ	½	30493	BTS-150K	Br.-Grn.-Yl.	ACC. Anode Dropping •	
R133	27KΩ	½	30409	BTS-27K	Red-Vi.-Or.	Tone Compensation	

*Not used in all models.
Note 1-Some models use 1500Ω in this application.
Note 2-Some models use 2700Ω in this application.
Note 3-This resistor is tapped at 500Ω and 1000Ω.

PARTS LIST AND DESCRIPTION CONTINUED ON PAGE 11

ALIGNMENT INSTRUCTIONS

PRE – ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If alignment is performed with picture tube removed, remove V22 from its socket to disable the high voltage supply.

The oscillator tube (V3) should be removed when performing IF adjustments. Use insulated alignment screwdriver for adjusting.

VIDEO IF ALIGNMENT

If receiver is badly misaligned making it impossible to get sufficent reading on VTVM with the signal being fed to the ant. terminals, signal may be fed to the mixer grid. This point is accessible through the hole in the chassis on right side of tuner (Point Ⓔ).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1				9	DC probe to junction of R40 and R41. Common to chassis.		Set contrast control to give a -3 volt reading. Leave at this setting during entire IF Alignment procedure.
2	Direct	To ant. terminals. (See prealignment notes)	19.75MC	9	DC probe to point Ⓐ. Common to chassis.	A1	Adjust for minimum deflection.
3	Direct	"	21.25MC	9	"	A2	"
4	Direct	"	21.25MC	9	"	A3	"
5	Direct	"	27.25MC	9	"	A4	"
6	Direct	"	21.8MC	9	"	A5	Adjust for maximum deflection.
7	Direct	"	25.3MC	9	"	A6	"
8	Direct	"	22.3MC	9	"	A7	"
9	Direct	"	25.2MC	9	"	A8	"
10	Direct	"	23.4MC	9	"	A9	Adjust for maximum deflection. If A7 required adjustment in Step 8 repeat Step 2. If FM signal gen. is not available continue with Step 12.

OVERALL VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal amplifier in the scope for horizontal deflection.

The waveforms shown may be inverted depending on the number of amplifying stages in the vertical amplifier in the scope being used.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11	5000 MMF	To dummy mixer tube. (See Fig. 6).	24MC (10MC sweep)	See Fig. 4.	9	Vert. Amp. to Point Ⓐ. Ground to chassis.	A5,A6, A7,A8, A9	Make slight adjustments if necessary to obtain response curve per Fig. 4. If considerable adjustment is required the traps must be realigned.

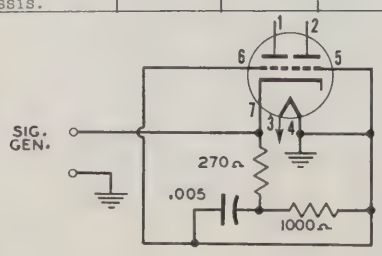
SOUND IF ALIGNMENT USING VTVM

Do not remove the shield covering the discriminator tube socket during Step 12. Fashion hook on 1 Megohm resistor and make connection to Point Ⓔ through alignment hole in shield.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12	5000MMF	High side to Pin #1 of 3rd Sound IF (V13). Low side to chassis.	21.25MC	9	DC probe to Point Ⓔ in series with 1 Meg. Common to chassis.	A10	Detune A11. Adjust A10 for maximum deflection.
13	5000MMF	"	"	9	DC probe to Point Ⓓ. Common to chassis.	A11	Adjust for zero reading. A positive or negative reading is obtained on either side of correct setting.
14	5000MMF	High side to Pin #1 of 2nd Sound IF (V12). Low side to chassis.	"	9	DC probe to Point Ⓓ. Common to chassis	A12,A13	Adjust for maximum deflection.
15	5000MMF	High side to tap on trap winding of L7. Low side to chassis.	"	9	"	A14, A15	"

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12	5000MMF	High side to Pin 1 of 3rd Sound IF (V13). Low side to chassis.	21.25MC (600KC sweep)	21.25MC	9	Vertical amp. to Point Ⓓ. Ground to chassis.	A10,A11	Adjust for maximum amplitude of peaks and straightness of diagonal line with marker at center of line.
13	5000MMF	High side to Pin 1 of 2nd Sound IF (V12). Low side to chassis.	"	"	9	Vert. amp. to Point Ⓓ in series with 33KΩ. Ground to chassis.	A12,A13	Adjust for maximum amplitude and symmetry per Fig. 2.
14	5000MMF	High side to tap on trap winding of L7. Low side to chassis.	"	"	9	"	A14,A15	Adjust for maximum amplitude and symmetry per Fig. 3. Continue with Step 16.



DUMMY MIXER TUBE

CAREFULLY BEND PIN 7 AT RIGHT ANGLE. CONNECT PINS 5 & 6 TO PIN 4 WHICH IS GROUNDED AT THE SOCKET. CONNECT OTHER COMPONENTS AS SHOWN.

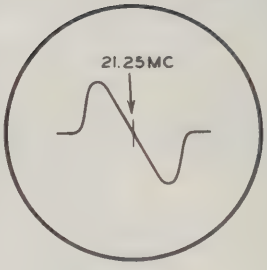


FIG. 1

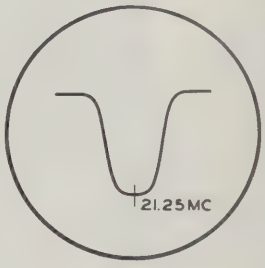


FIG. 2

FIG. 3

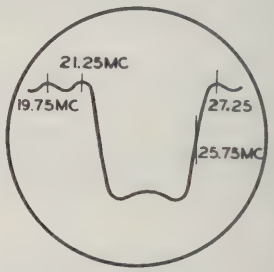


FIG. 4

FIG. 5

RF & MIXER LINE ALIGNMENT

On those models having the RF Grid returned to the contrast control it is necessary to set the bias at -1.5 volts. Connect DC probe of VTVM to pin 5 or 6 of 1st AF Tube (V15), common to chassis and set contrast control for reading of -1.5 volts.

The signal generator output should be terminated with a resistance equal to its output impedance (usually 50 ohms).

These adjustments are usually very stable and alignment should not be attempted unless they are known to be out of alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16	120Ω carbon res. in series with each lead	To ant. terminals.	177MC (10MC sweep)	175.25MC and 179.75MC	7	Vert. amp. to Point Ⓔ in series with 10KΩ. Ground to chassis.	A16,A17, A18,A19	Adjust for approx. flat top response per Fig. 5 with markers above 70%.
17	"	"	183MC (10MC sweep)	181.25MC and 185.75MC	8	"		Check for response curve per Fig. 5.
18	"	"	189MC (10MC sweep)	187.25MC and 191.75MC	9	"		"
19	"	"	195MC (10MC sweep)	193.25MC and 197.75MC	10	"		"
20	"	"	201MC (10MC sweep)	199.25MC and 203.75MC	11	"		"
21	"	"	207MC (10MC sweep)	205.25MC and 209.75MC	12	"		"
22	"	"	213MC (10MC sweep)	211.25MC and 215.75MC	13	"		"

If markers are below 70% on any channel make slight adjustment of A16, A17, A18 and A19 with channel selector on that channel. Recheck the other low band channels.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
23	120Ω carbon res. in series with each lead	To ant. terminals.	85MC (10MC sweep)	83.25MC and 87.75MC	6	Vert. amp. to Point Ⓔ in series with 10KΩ. Ground to chassis.	A20,A21 A22,A23	Adjust for approx. flat top response per Fig. 5 with markers above 70%.
24	"	"	79MC (10MC sweep)	77.25MC and 81.75MC	5	"		Check for response curve per Fig. 5.
25	"	"	69MC (10MC sweep)	67.25MC and 71.75MC	4	"		"
26	"	"	63MC (10MC sweep)	61.25MC and 65.75MC	3	"		"
27	"	"	57MC (10MC sweep)	55.25MC and 59.75MC	2	"		"

If markers are below 70% on any channel make slight adjustments of A20, A21, A22 and A23 with channel selector on that channel. Recheck the other high band channels.

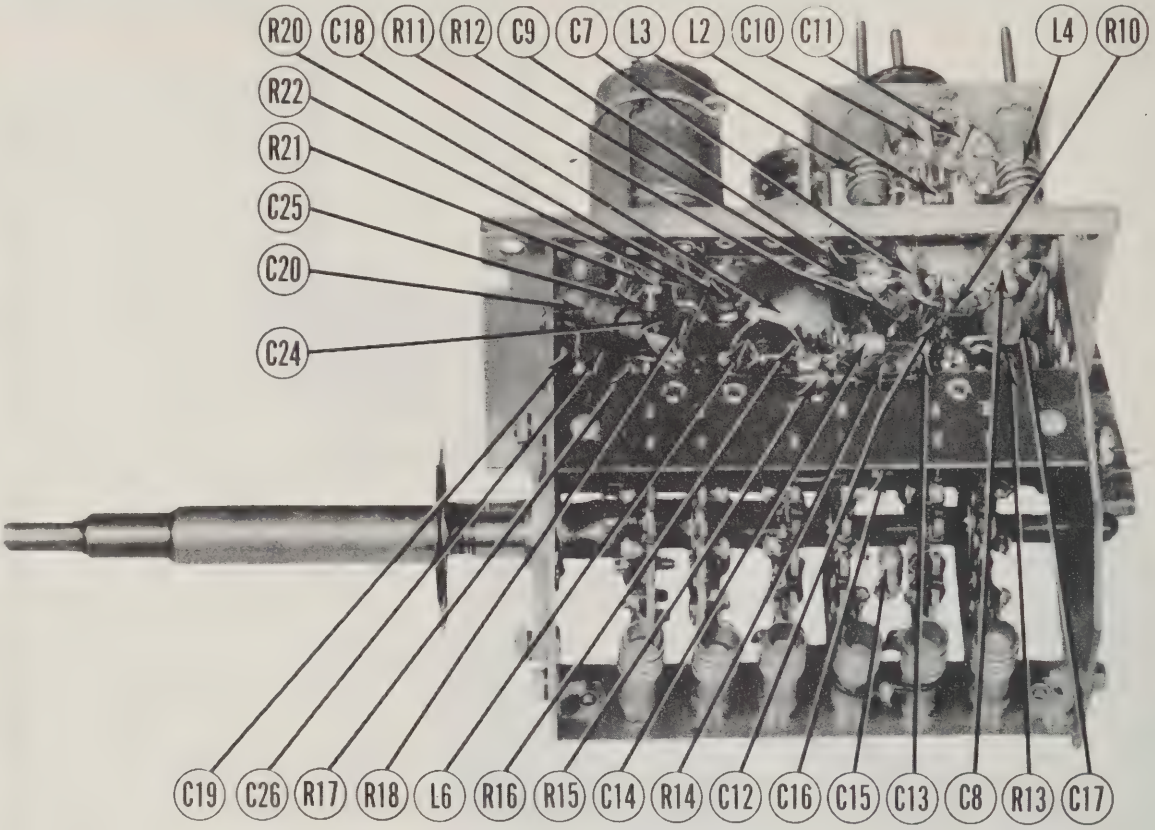
OSCILLATOR ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
28	2 - 120Ω carbon res.	To ant. terminals.	215.75MC	13	DC probe to Point Ⓔ. Common to chassis.	A24,A25	Adjust for zero reading. A positive and negative reading is obtained on either side of correct setting. Keep A24 and A25 slugs at approx. the same relative setting.
29	"	"	209.75MC	12	"	A26	Adjust for zero reading as above.
30	"	"	203.75MC	11	"	A27	"
31	"	"	197.75MC	10	"	A28	"
32	"	"	191.75MC	9	"	A29	"
33	"	"	185.75MC	8	"	A30	"
34	"	"	179.75MC	7	"	A31	"
35	"	"	87.75MC	6	"	A32,A33	Adjust for zero reading keeping A32 and A33 slugs at approx. the same relative position.
36	"	"	81.75MC	5	"	A34	Adjust for zero reading.
37	"	"	71.75MC	4	"	A35	" " " "
38	"	"	65.75MC	3	"	A36	" " " "
39	"	"	59.75MC	2	"	A37	" " " "

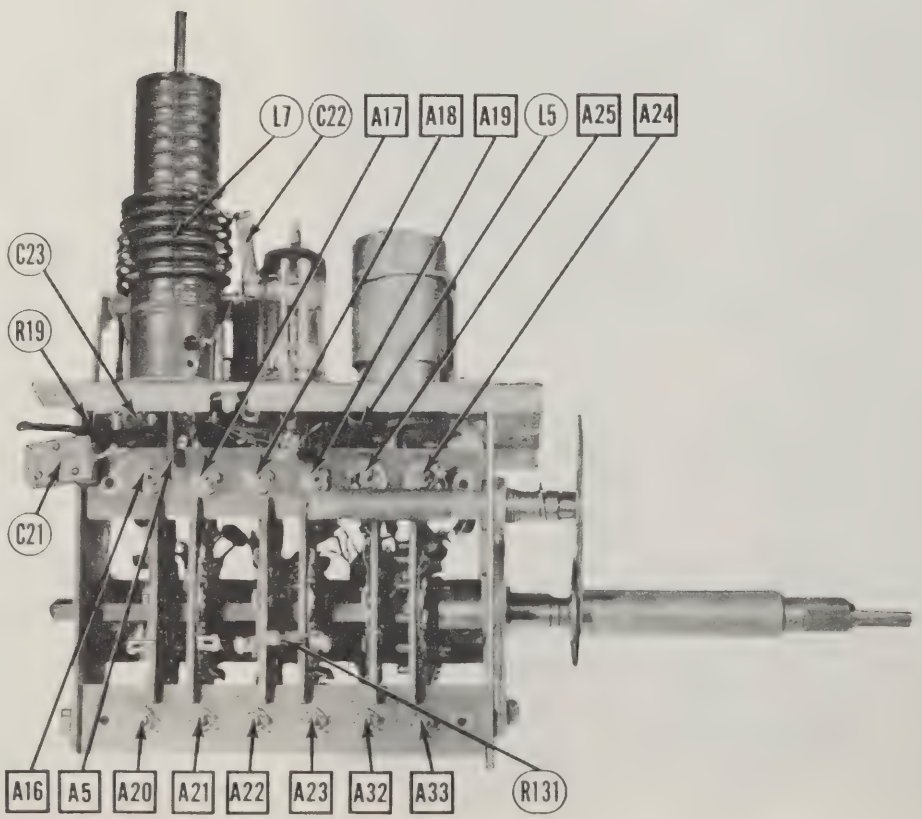
MIXER GRID TRAP ADJUSTMENT

A. Match the output of the signal generator (usually 50Ω carbon resistor across the gen. output and 120Ω carbon resistors in each lead) and connect to receiver antenna terminals.
B. Connect oscilloscope to Point Ⓔ through 10KΩ.
C. Shunt 1st Video IF Grid to ground with 1000 MMF cap. using shortest possible leads.
D. Loosely couple marker generator to antenna terminals.
E. Turn channel switch and marker generator through low frequency channels and observe response of each channel.
F. Select channel that is essentially flat with sound and picture markers at 80% or more on the response curve.
G. Remove shunt on 1st IF Grid and shunt the 2nd Video IF Grid to ground.
H. Adjust A38 (rear of tuner) for RF response similar to one selected with 1st IF Grid shunted.

NOTE: In later productions A38 is a fixed capacitor (C18). In those receivers this step may be followed as a check that correct mixer operation is obtained.



RF TUNER – RIGHT SIDE



RF TUNER – LEFT SIDE

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
T1	2.5 Amp. @ 117 V.	300MA. @ 670V.	5.1 Amp. @ 12V.	6 Amp. @ 5V.	71415	P-8152		
				SEC. 4 2 Amp. @ 5V				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	NOTES
T2	165Ω	1510Ω	71418	A-8121	TV-24A88	A-4000	Vert. Block.Osc. Trans.
T3	600Ω	6.5Ω	71417	A-8115	TV-24886	A-3035	Vert. Output Trans.
T4	37Ω	35Ω tapped @ 9.5Ω	71428				Hor. Sync. Disc. Trans
T5	420Ω tapped @ 180Ω	10.6Ω tapped @ .6Ω SEC. 2 0Ω	71416				Hor. Output Trans.
T6	247Ω		71421	FC-10			Focus Coil
T7	33Ω	3Ω	71522				Ion Trap*
T8A	68Ω		71420	DY-1			Vert. Deflection Yoke
B	14Ω						Hor. Deflection Yoke

*Some models use PM Type Ion Trap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
T9	7300Ω	3.2Ω	480Ω	.7Ω	71419	A-3878	T22847	A-2931	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA RCA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD RES.	VC IMP.				
SP1A	PM	3.2Ω				
B	62Ω	3.2Ω	71530			Alternate 5" Dynamic Speaker
C	62Ω	3.2Ω	71556			Alternate 12" Dynamic Speaker
	CONE DIA.	VC DIA.				
SP2A	4-7/8" x 7-1/8"	9/16"				
B	5"	9/16"				
C	12"	3/4"	36145			

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ↶)	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
L1	300MA	50Ω	3 Henries		C-2326*			*Redrill new mtg. hole.

COILS (RF-IF)

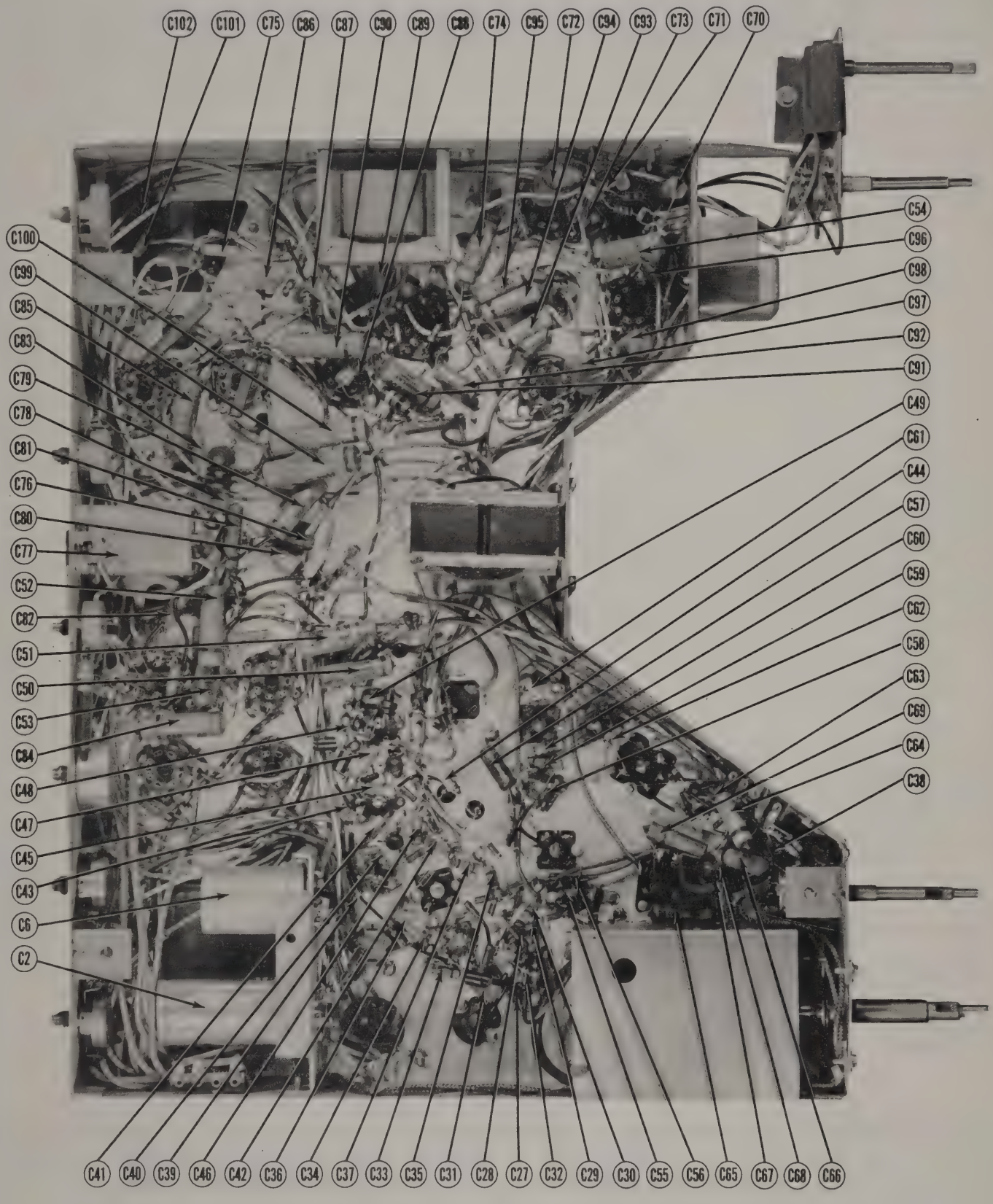
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	MEISSNER PART No.	NOTES
L2	Ant. Trans.	0Ω		71507		
L3	Interference Trap	0Ω				
L4	"	0Ω				
L5	Fil. Choke	0Ω		71505		
L6	Mixer Grid Coil	.1Ω		71506		
L7	1st Video IF & Sound Trap	.2Ω		71495		Part of Tuner Assy.
L8	Fil. Choke	0Ω		71505		
L9	2nd Video IF	.2Ω	0Ω	71423		
L10	Fil. Choke	0Ω		71505		
L11	3rd Video IF	.2Ω	0Ω	71425		
L12	Fil. Choke	0Ω		71505		
L13	4th Video IF	.2Ω		71426		
L14	Sound Trap	.1Ω		71422		
L15	Fil. Choke	0Ω		71505		
L16	5th Video IF	.1Ω		71426		
L17	Fil. Choke	0Ω		71505		
L18	Peaking Coil	6Ω		71528		Wound on 39KΩ resistor, 180 Microhenry.
L19	" "	8Ω		71526		250 Microhenry
L20	" "	5Ω		71529		Wound on 22KΩ resistor, 120 Microhenry.
L21	" "	4Ω		71527		93 Microhenry
L22	" "	5Ω		71529		Wound on 22KΩ resistor, 120 Microhenry.
L23	" "	4Ω		71527		93 Microhenry
L24	1st Sound IF	.2Ω	0Ω	71424		
L25	2nd " "	.1Ω	0Ω	71424		
L26	Sound Disc. Trans.	0Ω	0Ω	71427		
L27	Hor. Width Control	.6Ω		71429		
L28	Hor. Linearity Cont.	37Ω		71449		

DIAL LIGHTS

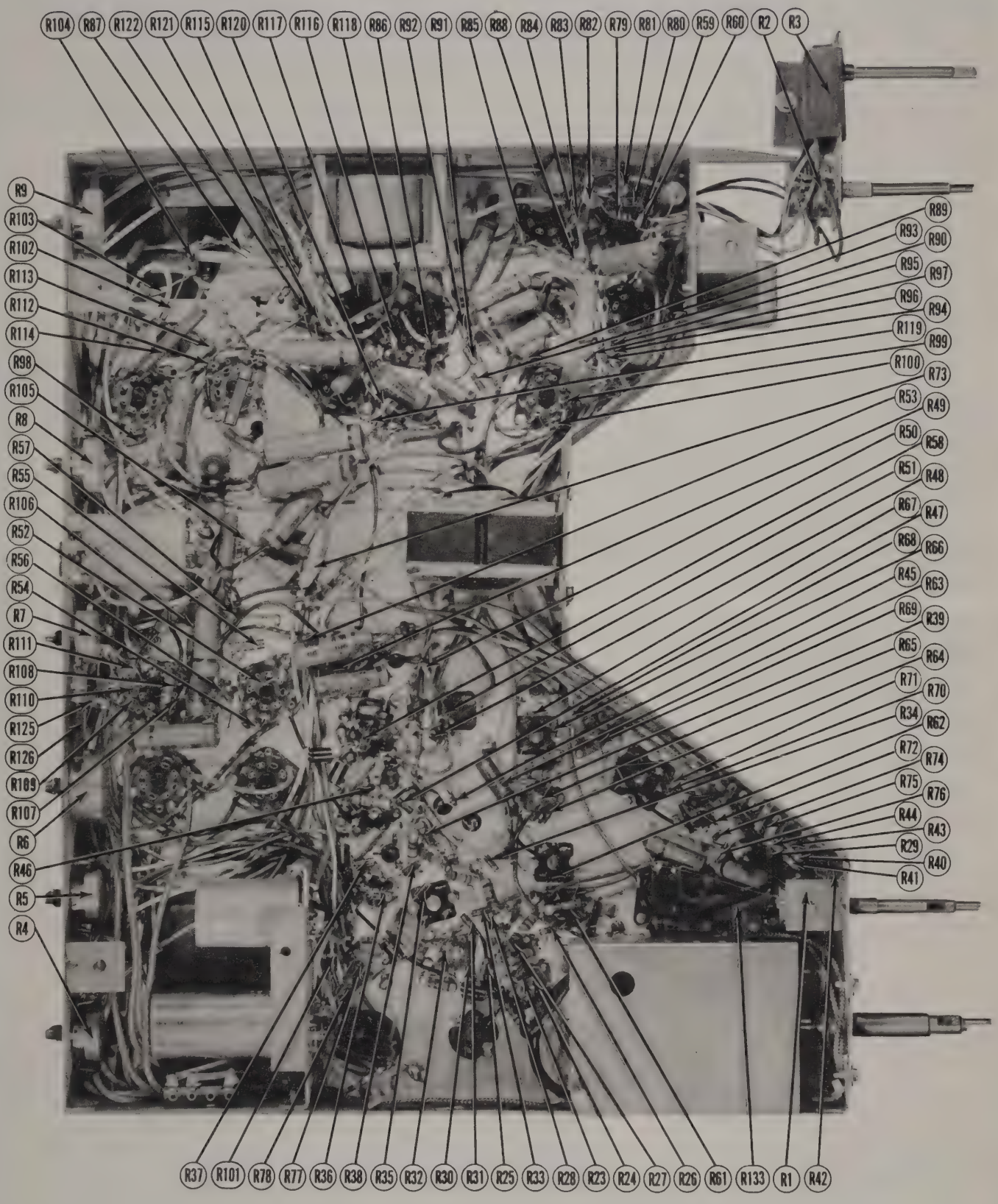
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RCA PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	31480		Type 47-Used in 630TCS only

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M2	Fuse		AGC 1/4 Amp.
M3	Tuner Assy.		Complete Unit
M4	Power Cord	71457	
M5	Receptacle	71448	Power Interlock Plug
M6	Terminal Board	71454	Sync. Link (3 Terminals with Link)
M7	" "	71460	Antenna (2 Terminals)
	Knob	71535	Contrast, Brightness or Vertical Hold
	"	71537	Dummy Brightness
	"	71533	Fine Tuning
	"	71536	Horiz. Hold or Volume
	"	71534	Channel Selector
	Safety Glass	71981	
	Plate Cap.	71532	Hi Volt. Rect. & Horiz. Output Plates
	Escutcheon	71598	Channel Indicator
	Anode Connector	71523	Picture Tube Anode Plug
	Socket	71525	Picture Tube Socket



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW–RESISTOR IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V 1	6J6	50VDC	50VDC	6.2VAC	0V.	-.2VDC	-.2VDC	0V.	-	-
V 2	6J6	95VDC	95VDC	6.2VAC	0V.	-2VDC	-3.1VDC	0V.	-	-
V 3	6J6	55VDC	55VDC	6.2VAC	0V.	-1.4VDC	-5.2VDC	.2VDC	-	-
V 4	6AG5	0V.	0V.	0V.	6.2VAC	95VDC	95VDC	.3VDC	-	-
V 5	6AG5	-.3VDC	.2VDC	6.2VAC	0V.	98VDC	98VDC	.2VDC	-	-
V 6	6AG5	-.6VDC	.2VDC	6.2VAC	0V.	93VDC	105VDC	.2VDC	-	-
V 7	6AG5	0V.	1VDC	6.2VAC	0V.	85VDC	110VDC	1VDC	-	-
V 8	6AL5	0V.	0V.	6.2VAC	0V.	.7VDC	0V.	0V.	-	-
V 9	6AU6	-.6VDC	0V.	0V.	6.2VAC	255VDC	117VDC	0V.	-	-
V 10	6K6GT	0V.	0V.	92VDC	117VDC	-2VDC	0V.	6.2VAC	2.8VDC	-
V 11	6BA6	0V.	0V.	0V.	6.2VAC	103VDC	103VDC	1.4VDC	-	-
V 12	6BA6	0V.	0V.	6.2VAC	0V.	107VDC	105VDC	1VDC	-	-
V 13	6AU6	-.3VDC	0V.	0V.	6.2VAC	45VDC	45VDC	0V.	-	-
V 14	6AL5	2.2VDC	-.4VDC	4.9VAC	0V.	0V.	0V.	-.7VDC	-	-
V 15	6AT6	-.4VDC	0V.	0V.	6.2VAC	-.8VDC	-.8VDC	75VDC	-	-
V 16	6K6GT	0V.	6.2VAC	240VDC	250VDC	-9VDC	0V.	0V.	0V.	-
V 17	6SK7	0V.	0V.	0V.	-.8VDC	0V.	108VDC	6.2VAC	208VDC	-
V 18	6SH7	0V.	0V.	0V.	-2.6VDC	0V.	117VDC	6.2VAC	115VDC	-
V 19	6SN7GT	-1.4VDC	77VDC	0V.	-120VDC	-37VDC	-90VDC	6.2VAC	0V.	-
V 20	6AL5	-.6VDC	-5.6VDC	0V.	4.9VAC	-2VDC	0V.	-6.5VDC	-	-
V 21	6AC7	0V.	0V.	0V.	-.9VDC	0V.	105VDC	6.2VAC	190VDC	-
V 22	6K6GT	0V.	0V.	170VDC	210VDC	-1[illegible].8VDC	340VDC	6.2VAC	.8VDC	-
V 23	6BG6-G	0V.	6.2VAC	-82VDC	0V.	-94VDC	0V.	0V.	165VDC	#
V 24	5V4G	0V.	350VDC	0V.	290VDC	0V.	2.0VDC	0V.	350VDC	-
V 25	6J5	0V.	0V.	-3..VDC 200VDC	-90VDC	-115VDC	-85VDC	6.2VAC	-90VDC	-
V 26	6K6GT	0V.	6.2VAC	187VDC	1[illegible]7VDC	-85VDC	-67VDC	0V.	-50VDC	-
V 27	1B3GT	#DO NOT	MEASURE.							
V 28	5U4G	0V.	360VDC	0V.	360VAC	0V.	360VAC	0V.	350VDC	-
V 29	5U4G	0V.	360VDC	0V.	360VAC	0V.	360VAC	0V.	350VDC	-
V 30	10BP4	0V.	1VDC	PIN 10 290VDC	PIN 11 0V.	PIN 12 6.2VAC				

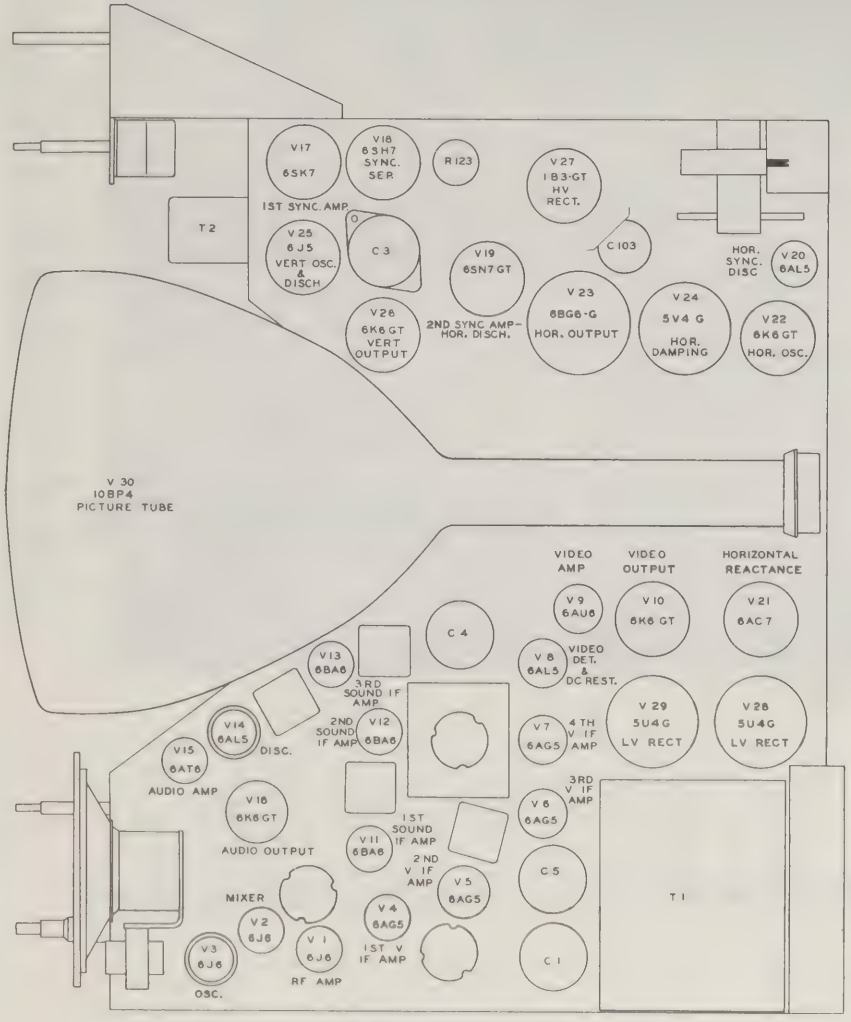
#DO NOT MEASURE.

RESISTANCE READINGS

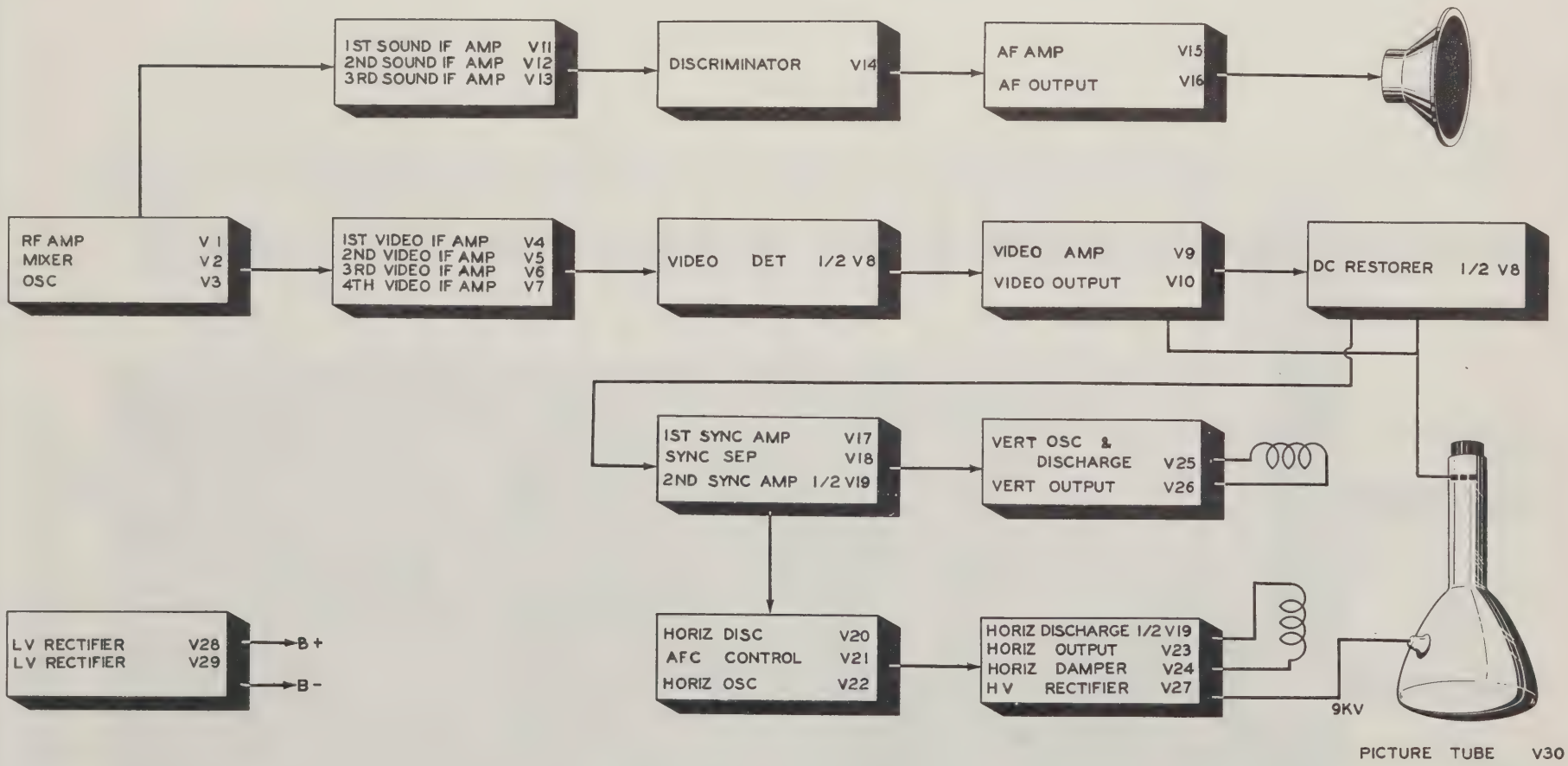
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V 1	6J6	6KΩ*	6KΩ*	.1Ω	0Ω	1KΩ	1KΩ	0Ω	-	-
V 2	6J6	3KΩ*	3KΩ*	.1Ω	0Ω	1 Meg.	1 Meg.	0Ω	-	-
V 3	6J6	6.8KΩ*	6.8KΩ*	.1Ω	0Ω	100KΩ	100KΩ	47Ω	-	-
V 4	6AG5	17KΩ	40Ω	0Ω	.1Ω	3KΩ*	3KΩ*	40Ω	-	-
V 5	6AG5	16KΩ	40Ω	.1Ω	0Ω	3KΩ*	3KΩ*	40Ω	-	-
V 6	6AG5	10KΩ	40Ω	.1Ω	0Ω	5KΩ*	2.5KΩ*	40Ω	-	-
V 7	6AG5	.2Ω	150Ω	.1Ω	0Ω	7.5KΩ*	2.5KΩ*	150Ω	-	-
V 8	6AL5	.2Ω	100KΩ	.1Ω	0Ω	1.2 Meg.	0Ω	4KΩ	-	-
V 9	6AU6	500KΩ	0Ω	0Ω	.1Ω	9KΩ*	1.4KΩ*	0Ω	-	-
V 10	6K6GT	0Ω	0Ω	4.5KΩ*	1.4KΩ*	500KΩ	INF.	.1Ω	330Ω	-
V 11	6BA6	.1Ω	0Ω	0Ω	.1Ω	2.5KΩ*	2.5KΩ*	100Ω	-	-
V 12	6BA6	500KΩ	0Ω	.1Ω	0Ω	2.5KΩ*	4.2KΩ*	100Ω	-	-
V 13	6AU6	20KΩ	0Ω	0Ω	.1Ω	7KΩ*	7KΩ*	0Ω	-	-
V 14	6AL5	200KΩ	100KΩ	.1Ω	0Ω	0Ω	0Ω	100KΩ	-	-
V 15	6AT6	10 Meg.	0Ω	0Ω	.1Ω	10KΩ	10KΩ	330KΩ*	-	-
V 16	6K6GT	INF.	.1Ω	1.5KΩ*	1KΩ*	250KΩ	260KΩ	0Ω	0Ω	-
V 17	6SK7	0Ω	0Ω	0Ω	900KΩ	0Ω	2.2KΩ*	.1Ω	9KΩ*	-
V 18	6SH7	0Ω	0Ω	0Ω	900KΩ	0Ω	1.4KΩ*	.1Ω	7.5KΩ*	-
V 19	6SN7GT	1.2 Meg.	7KΩ*	0Ω	230KΩ	650KΩ*	450Ω	.1Ω	0Ω	-
V 20	6AL5	900KΩ	1.5 Meg.	0Ω	.1Ω	12Ω	0Ω	1.5 Meg.	-	-
V 21	6AC7	0Ω	0Ω	0Ω	1.4 Meg.	10Ω	10KΩ*	.1Ω	20KΩ*	-
V 22	6K6GT	INF.	0Ω	5KΩ*	10KΩ*	25KΩ	5.8KΩ*	.1Ω	10Ω	-
V 23	6BG6-G	INF.	.1Ω	540Ω	INF.	450KΩ	INF.	0Ω	9.5KΩ*	6KΩ*
V 24	5V4G	INF.	5.5KΩ*	INF.	500Ω*	INF.	50Ω*	INF.	5.5KΩ*	-
V 25	6J5	0Ω	0Ω	260KΩ* 1.3 Meg.*	65KΩ	1.5 Meg.	65KΩ	.1Ω	450Ω	-
V 26	6K6GT	INF.	.1Ω	10KΩ*	10KΩ*	2.5 Meg.	2500Ω	0Ω	2KΩ 6.2KΩ	-
V 27	1B3GT	INF.	INF.	INF.	INF.	INF.	INF.	INF.	INF.	6KΩ*
V 28	5U4G	INF.	5.5KΩ	INF.	460Ω	INF.	460Ω	INF.	5.5KΩ	-
V 29	5U4G	INF.	5.5KΩ	INF.	460Ω	INF.	460Ω	INF.	5.5KΩ	-
V 30	10BP4	0Ω	1.3 Meg.	PIN #10 150KΩ*	PIN #11 0Ω	PIN #12 .1Ω				

*MEASURED FROM PIN 8 OF V28.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at maximum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



TUBE PLACEMENT CHART



BLOCK DIAGRAM

DISASSEMBLY INSTRUCTIONS

1. Remove nine screws from back panel and remove panel.
2. Remove two screws holding top center of cabinet and remove.
3. Remove two Phillips screws from front safety glass panel and remove panel.
4. Loosen two top sliding brackets that hold picture tube in place.
5. Remove picture tube socket, high voltage lead and ion trap and carefully slide picture tube out the front.
6. Remove eight push-on type control knobs.
7. Unplug speaker.
8. Remove five chassis bolts from bottom of cabinet and slide chassis out rear of cabinet.
9. Remove four nuts, washers and lock washers from speaker and remove speaker.

HORIZONTAL OSCILLATOR ALIGNMENT

HORIZONTAL OSCILLATOR ALIGNMENT CHECK:

The sync. link must be in the normal position (2 to 3). After turning the horizontal hold control to the maximum counter clockwise position, the picture should remain in horizontal sync. Remove the picture momentarily by turning the contrast control fully counter-clockwise and then return it to the normal operating position. This should pull the picture back into synchronization.

Now turn the horizontal hold control fully clockwise. The picture should remain in sync. Momentarily remove the signal and again the picture should pull into sync. if receiver is functioning properly.

If the receiver functions properly under these checks it is not necessary to align the horizontal oscillator circuit. However, if the picture is not normal or stable the horizontal oscillator must be aligned.

SLIGHT RETOUCH ALIGNMENT:

If the receiver failed in the above check to hold sync. at either extreme of the hold control or after momentary removal of the signal, it may be possible to align the horizontal oscillator by making slight adjustments. If this fails it will be necessary to completely re-align the horizontal oscillator circuit.

Tune in a TV station and adjust tuning for best sound quality. Sync. the picture and adjust the contrast control to slightly less than normal position. Turn the horizontal hold control to the point where the horizontal oscillator fails to hold or pull in. Remove signal. Turn B2 frequency adjustment (located at rear of chassis) until oscillator pulls into sync. Now check the pull-in and hold for the other extreme of the horizontal hold control.

COMPLETE ALIGNMENT:

Tune in a TV station for the best sound quality. Adjust vertical hold control to vertically sync. the picture and adjust the contrast control to slightly less than normal. Turn B2 frequency adjustment until picture syncs. horizontally. If blanking bar is present on picture adjust B1 (phasing adjust screw) until blanking bar moves to the right and off the raster. If ripples occur in the raster turn B1 in a clockwise direction until the unstable condition is removed. The length of this adjustment screw in its correct position is usually about 1/2 inch beyond the bushing.

Turn horizontal hold control fully counter-clockwise and adjust B2 until picture fails to sync. Now slowly turn B2 to the point where the picture syncs. again. Readjust B1 so that the left side of picture is close to the left side of the raster but does not fold over.

Turn horizontal hold fully clockwise. Right side of picture should be close to right side of raster but does not fold over. If picture does fold over, readjust B1.

When signal is restored after momentary removal of the signal, the picture should fall into sync. If picture fails to fall into sync. turn B2 counter-clockwise until picture syncs. in.

Turn horizontal hold fully counter-clockwise. Picture should fall back into sync. after momentary removal of signal.

If picture fails to pull in sync. after momentary removals of the signal in both extremes of the horizontal hold control, there may not be a sufficient pull-in range, though not necessarily. A pull-in of 3/4 of the hold control range should be satisfactory.

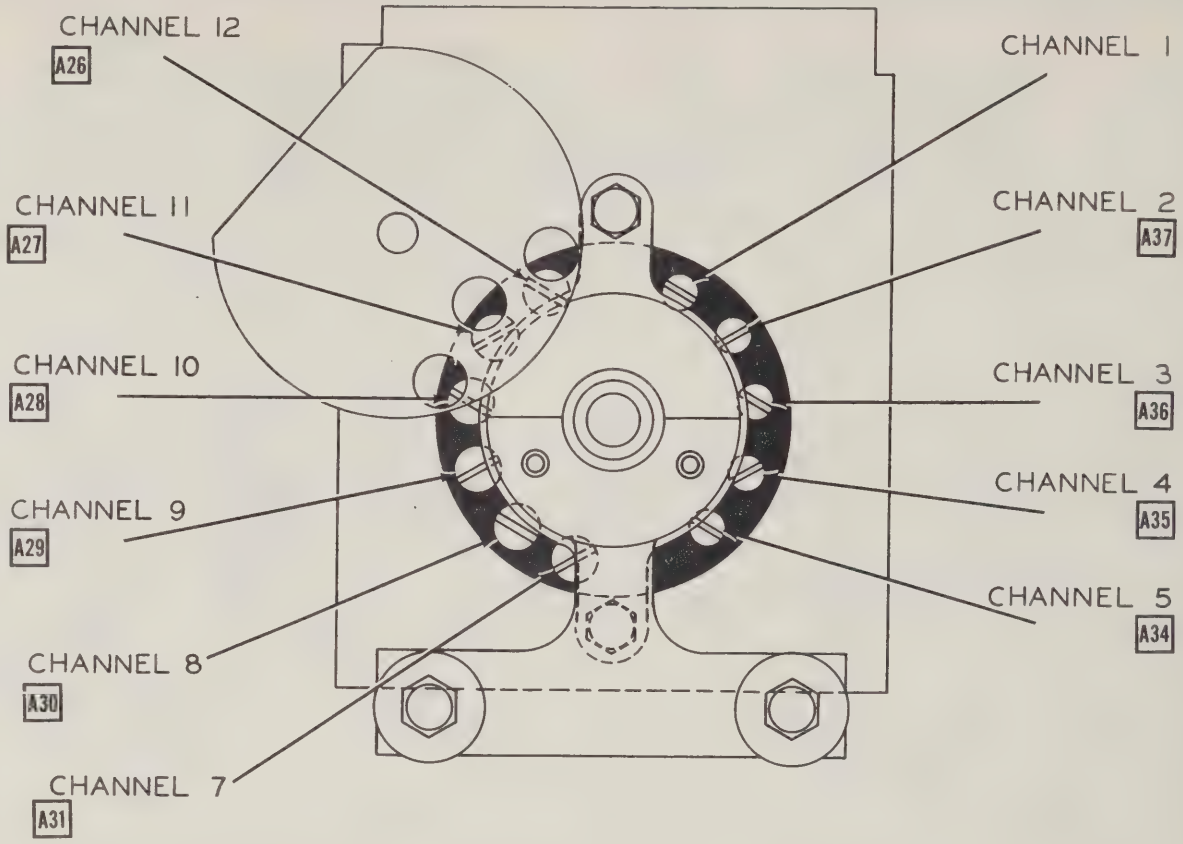
Excessive pull-in is objectionable because high control circuit sensitivity gives greater reaction to noise pulses. This may also affect the vertical sync. and equalizing pulses which tend to cause a bend in the top portion of the raster.

This condition is more noticeable in the 1 to 2 position of the sync. link on models 630TS and 630TCS.

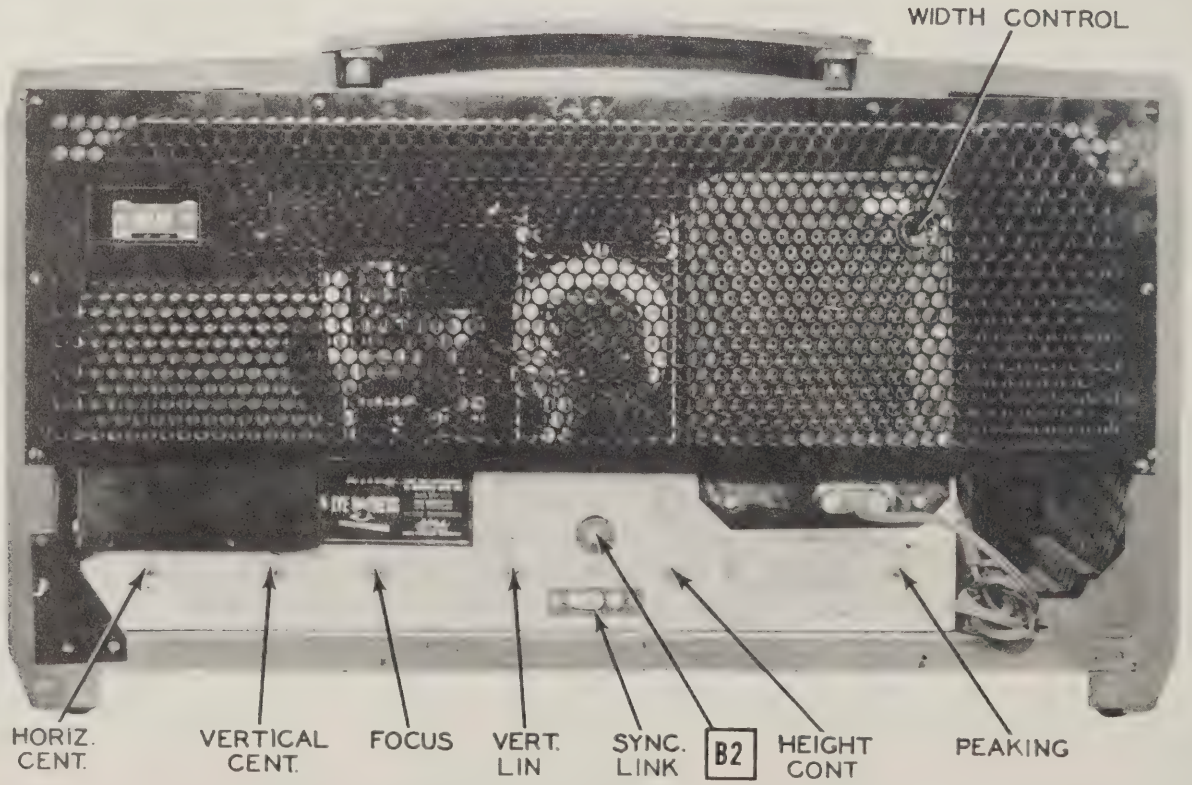
HORIZONTAL LINEARITY ADJUSTMENT

Turn horizontal peaking control R9 clockwise as far as possible without crowding right side of picture. This position provides maximum voltage to picture tube second anode. Adjust width control until raster fills the mask horizontally (8½ inches). Adjust horizontal linearity control until picture is symmetrical left and right. (It may be necessary to slightly readjust horizontal peaking control). Adjust horizontal centering to center of raster.

If continued adjustments of the peaking, width and linearity controls fail to give proper linearity, it may necessitate moving the tap on R123 which is located in the high voltage compartment. After this tap has been moved, it will be necessary to readjust the peaking, width and linearity controls.



RF OSCILLATOR ALIGNMENT POINTS



CABINET–REAR VIEW

TRAV-LER
MODEL 5036

TRAV-LER
MODEL 5036

TRAV-LER MODEL 5036

TRADE NAME	Trav-Ler, Model 5036
MANUFACTURER	Trav-Ler Radio & Tele. Corp., 571 W. Jackson, Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 12SA7GT Converter, 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-125 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .20 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER.	ADJUST	REMARKS
1	.1 MFD	High side to large stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.1 MFD	"	1500KC	1500KC	"	A5	Adjust for maximum output.
3	200MMFD	High side to external ant. lead. Low side to B-.	1400KC	Tune for maximum output.	"	A6	" " " "

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-19 SET #54-FOLDER #19

PARTS LIST AND DESCRIPTIONS

TRAV-LER MODEL 5036

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		TRAV-LER PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	8AD	
2	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
5A	40	150	EC-12	AF84D4A*	UP4215	DY-4020-150	EL-24	Filter-Red
B	20	150						" -Yellow
6	.05	400	PC-5	484-05	GT485	ST-4-05	TC-15	Line Filter
7	.01	400	PC-7	484-01	GT481	ST-4-01	TC-11	Output Plate Bypass
8	.05	400	PC-2	484-05	GT485	ST-4-05	TC-15	AVC Filter
9	.25	200	PC-4	484-.25	GT2P25	ST-2-25	TC-2	Bias Filter
10	.1	400	PC-8	484-.1	GT4P1	ST-4-1	72P2	Line Isolation
11	.05	400	PC-5	484-05	GT485	ST-4-05	TC-15	Phono Isolation
12	6500	400	PC-10	1467-008	1D3D7	MW.3-27	1FM-27	Audio Coupling
13	6500	400	PC-10	1467-008	1D3D7	MW.3-27	1FM-27	" "
14	500	300	MC-5	1468-0005	5W5T5	MO.5-35	1FM-35	AF Plate Bypass-Cer.
15	100	500	MC-2	1468-0001	5W5T1	MO.5-31	1FM-31	RF Diode Filter
16	50	300	MC-4	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.-Cer.
17	500	300	MC-5	1468-0005	5W5T5	MO.5-35	1FM-35	Phono Tone Comp.-Cer.

*Omit bypass section.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	TRAV-LER PART No.	IRC PART No.	CLAROSTAT PART No.	
18A	1 Meg.	½	VC-4	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 18A per instructions
C	Switch		" "	41	SW-A	" " " " "

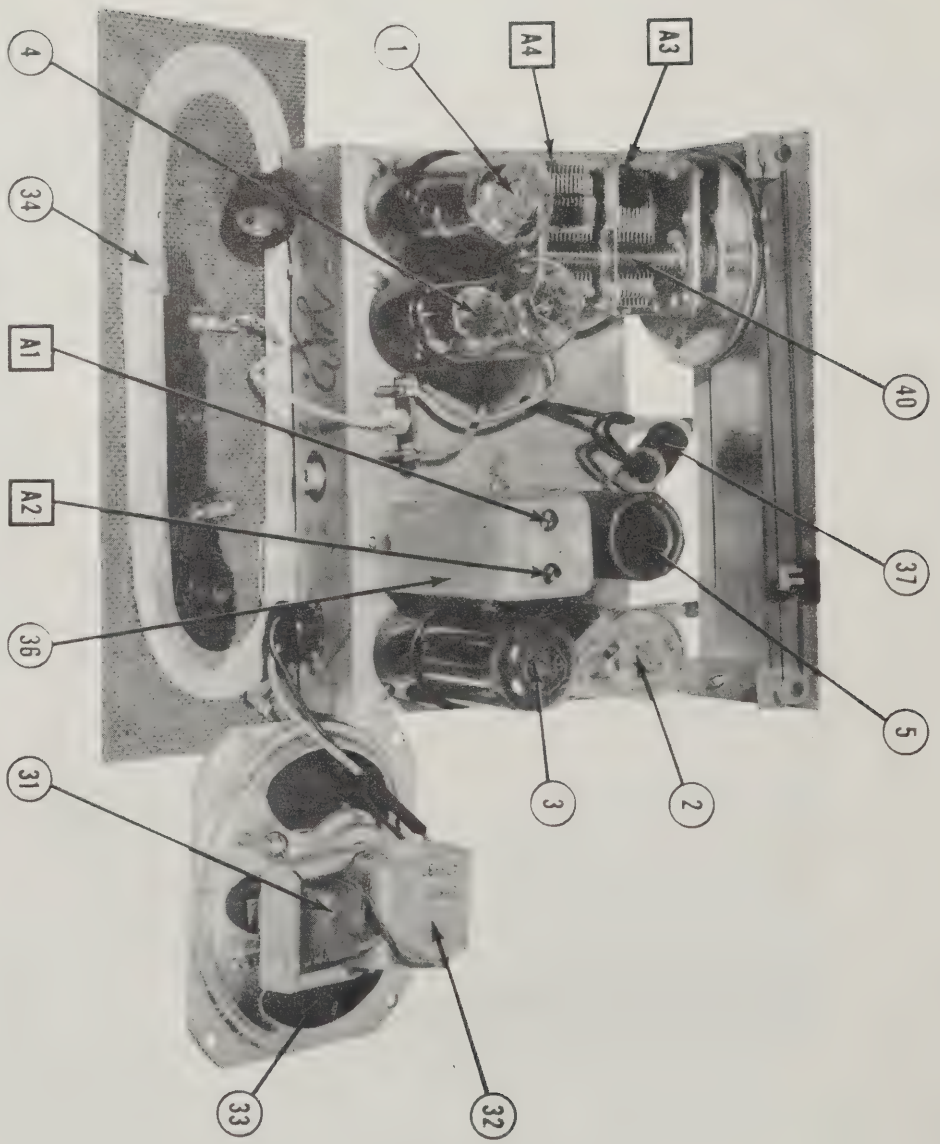
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TRAV-LER PART No.	IRC PART No.	
19	22KΩ	½	1R-9	BTS-22K	Red-Red-Or. Osc. Grid
20	47KΩ	½	1R-10	BTS-47K	Yl.-Vi.-Or. " "
21	3.3 Meg.	½	1R-23	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
22	10 Meg.	½	1R-3	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
23	470KΩ	½	1R-11	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
24	470KΩ	½	1R-11	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	470KΩ	½	1R-11	BTS-470K	Yl.-Vi.-Yl. Phono Tone Comp.
26	220KΩ	½	1R-20	BTS-220K	Red-Red-Yl. Phono Tone Comp.
27	2200Ω	1	1R-25	BTA-2200	Red-Red-Red Filter
28	33Ω	½	1R-17	BW-½-33	Or.-Or.-Blk. Surge Limiter
29	47Ω	1	1R-41	BW-1-47	Yl.-Vi.-Blk. Line Dropping
30	220KΩ	½	1R-20	BTS-220K	Red-Red-Yl. Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
31	1800Ω	3.4Ω	150Ω	.5Ω	Part of SPK-10	A-3876#	T22S45#	A-2928#	#Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRAV-LER PART No.	JENSEN PART No.	QUAM PART No.	
32	FIELD PM	VC IMP. 3.4Ω	SPK-10	ST-113 Mod. P4-X	4A07	
33	CONE DIA. 4"	VC DIA. 9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRAV-LER PART No.	MEISSNER PART No.	
34	Loop Ant.	29Ω	2Ω	LL-19		
35	Osc. Coil	.8Ω	6.1Ω	LO-14		
36	IF Trans.	18Ω	17.5Ω	LI-8		

DIAL LIGHT

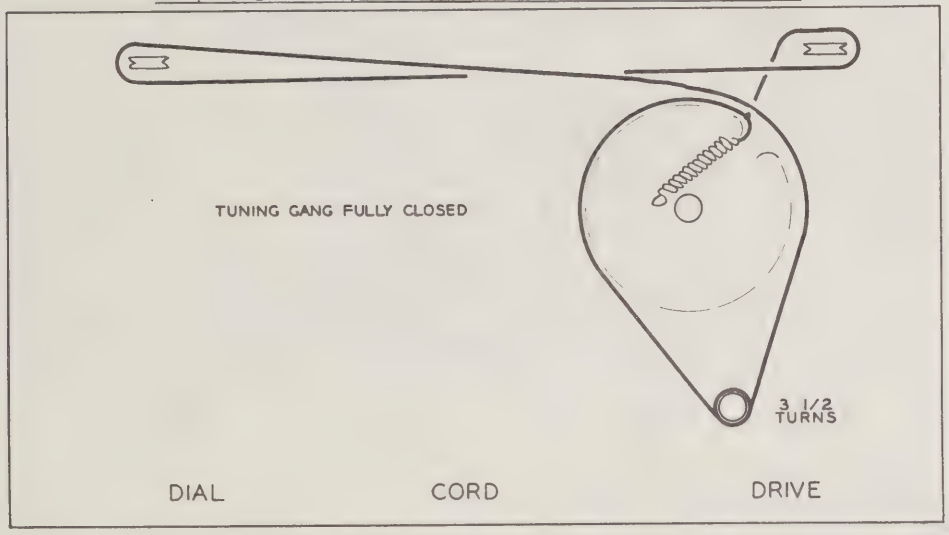
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRAV-LER PART No.		
37	Bayonet	6-8	0.15	Brown	PB-1		Type #47

PHONO CARTRIDGE

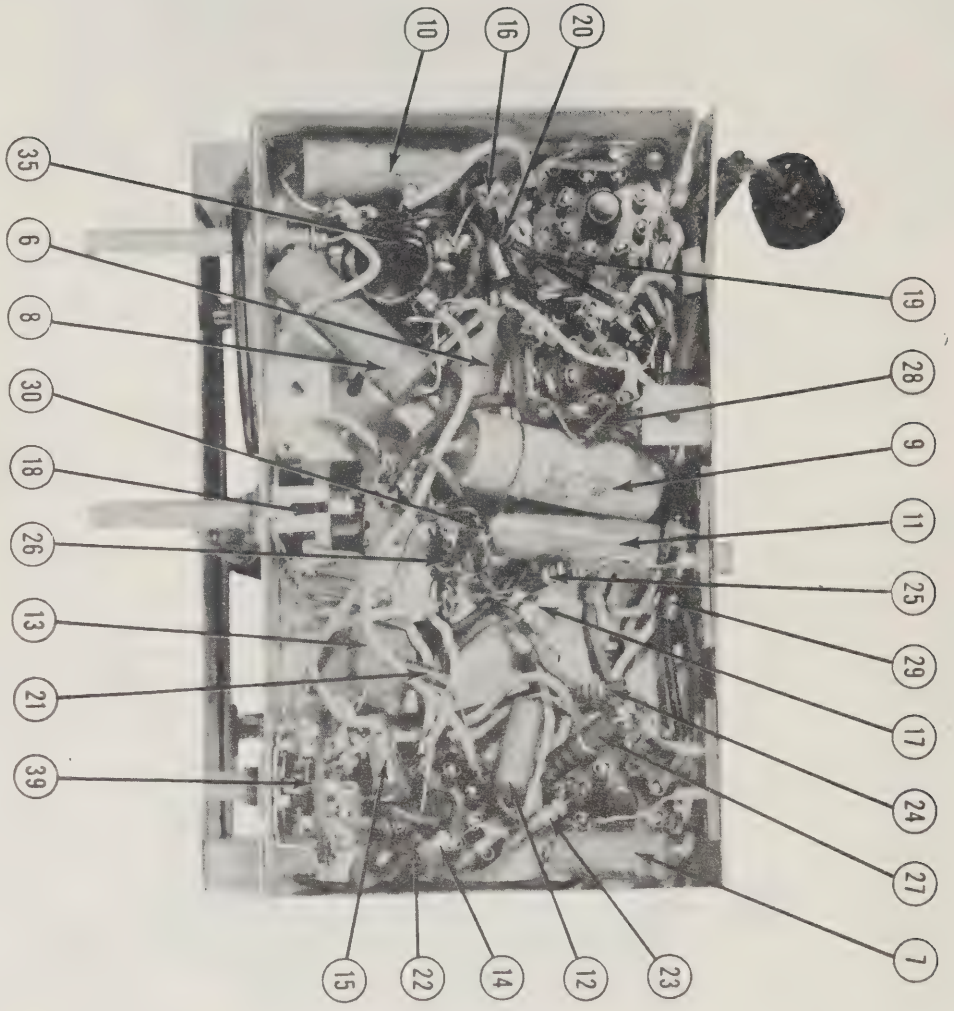
ITEM No.	REPLACEMENT DATA		REMARKS
	TRAV-LER PART No.	ASTATIC PART No.	
38		L-75A	L-75A Original Part

MISCELLANEOUS

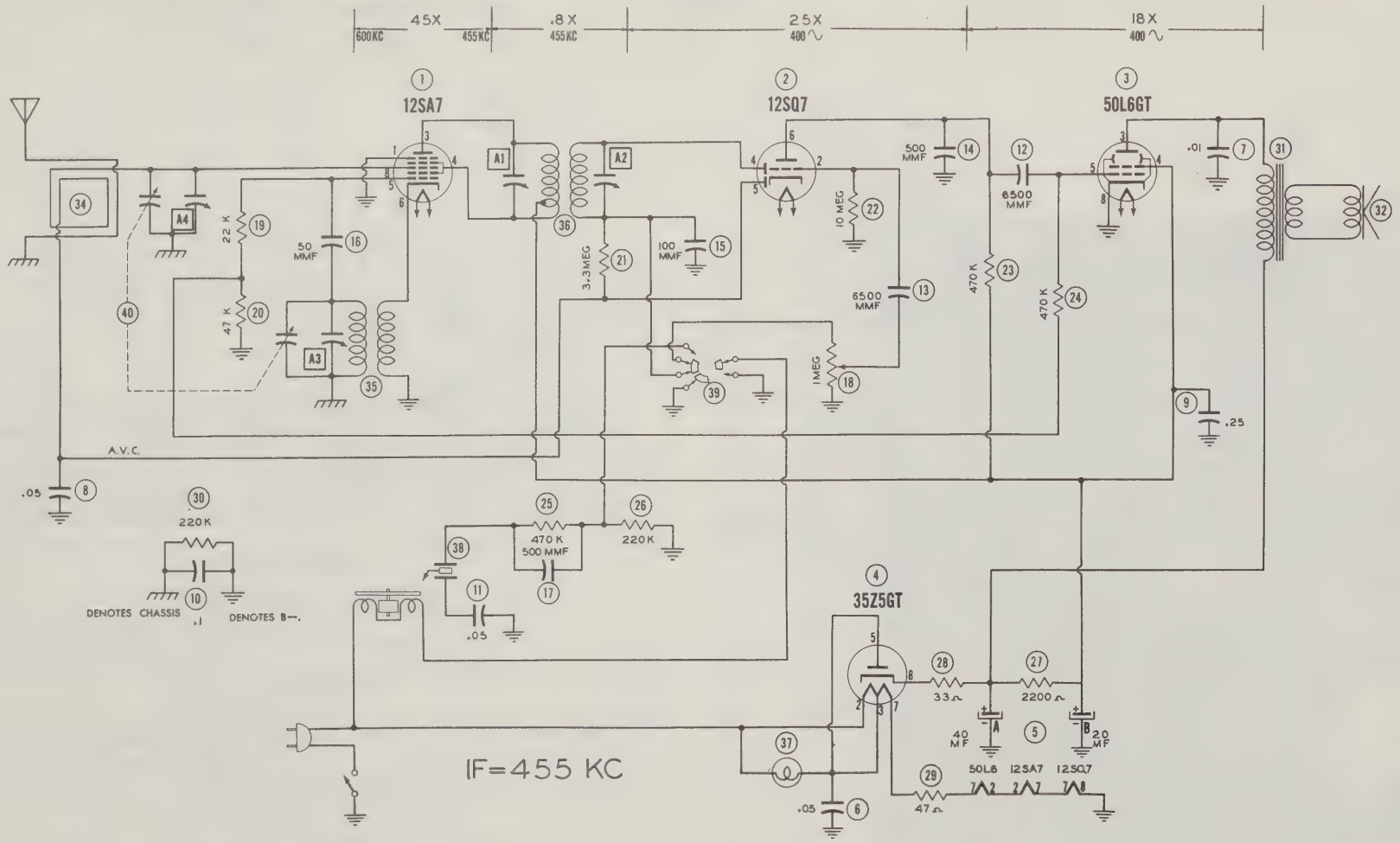
ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
39	Switch	SW-1	Radio-Phono
40	2 Gang Var. Cap.	GC-6	(24-449MMF, 32-195MMF)



CHASSIS—BOTTOM VIEW



TRAV-LER MODEL 5026



VOLTAGE READINGS

RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	28VAC	100VDC	100VDC	-17VDC§	0V.	14VAC	-.4VDC
2	12SQ7GT	0V.	-1VDC	0V.	0V.	-1VDC	50VDC	14VAC	0V.
3	50L6GT	0V.	28VAC	125VDC	100VDC	-2VDC	-11VDC	80VAC	0V.
4	35Z5GT	0V.	117VAC	113VAC	-11VDC	113VAC	0V.	90VAC	130VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	220KΩ	26Ω	42KΩ	42KΩ	70KΩ	.8Ω	13Ω	4.3 Meg.
2	12SQ7GT	220KΩ	10 Meg.	0Ω	1 Meg.	4.3 Meg.	510KΩ	13Ω	0Ω
3	50L6GT	220KΩ	26Ω	40KΩ	42KΩ	520KΩ	47KΩ	90Ω	0Ω
4	35Z5GT	220KΩ	160Ω	150Ω	47KΩ	150Ω	INF.	130Ω	40KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1949

492-19

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

WESTINGHOUSE MODELS H-185, H-195 (Ch. V-2131, V-2131-1) BATTERY-LINE OPERATED

WESTINGHOUSE MODELS H-185, H-195 (Ch. V-2131, V-2131-1) BATTERY-LINE OPERATED

MODEL H 185

MODEL H 195

WESTINGHOUSE MODELS H-185, H-195 (Ch. V-2131, V-2131-1) BATTERY-LINE OPERATED

TRADE NAME	Westinghouse, Models H-185, H-195 (Ch. V-2131, V-2131-1)
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1U5 Det.-AVC-AF, 3S4 Power Output
POWER SUPPLY	105-120 Volts AC-DC or 7.5 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	.11 Amp. @ 117 Volts AC or 58MA @ 7.5 Volts DC and 9MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200MMFD	High side of sig. gen. to large stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2		Loop	1615KC	Tuning cap. fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-20 SET #54-FOLDER #20

PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE MODELS H-195, H-196

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1U5	1U5	6BW	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	80	150	V5665		UP7DJ63	DY-804020-150#		● Filter
B	40	150						■ "
C	30	150			BR3015			▲ "
D	100	25				M-100-25		Fil. Bypass
6	.05	400	RCP10W4503A	484-05	GT4S5	ST-4-05	TC-15	Line Filter
7	.05	400	V-5618-1				72P1	Line Isolation-See Note
8	.002	600	RCP10W6202A	684-002	GT6D2	ST-6-002	TC-22	Output Plate Bypass
9	.005	600	RCP10W6502A	684-005	GT6D5	ST-6-005	TC-25	Audio Coupling
10	.002	600	RCP10W6202A	684-002	GT6D2	ST-6-002	TC-22	" "
11	.01	400	RCP10W4103A	484-01	GT4S1	ST-4-01	TC-11	AF Screen Bypass
12	.05	200	RCP10W2503A	484-05	GT2S5	ST-4-05	68P35	Fil. Bypass
13	.05	200	RCP10W2503A	484-05	GT2S5	ST-4-05	68P35	Screen Decoupling
14	.05	200	RCP10W2503A	484-05	GT2S5	ST-4-05	68P35	AVC Filter
15	.1	200	RCP10W2104A	484-.1	GT2P1	ST-2-1	68P36	Fil. Bypass
16	.01	400	RCP10W4103A	484-01	GT4S1	ST-4-01	TC-11	IF Grid Filter
17	220	500	RCM20A221M	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
18	270	500	RCM20A221M	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter

#Install new mounting socket. Note-Special resonant capacitor.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTING. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	1 Meg	½	V-5666-2	D13-137	M-63-Z	Volume Control-See Note
B	Shaft		Not Req.	A	Not Req.	Attach to 19A per instructions
C	Switch		" "	42	SW-A2	" " " " "

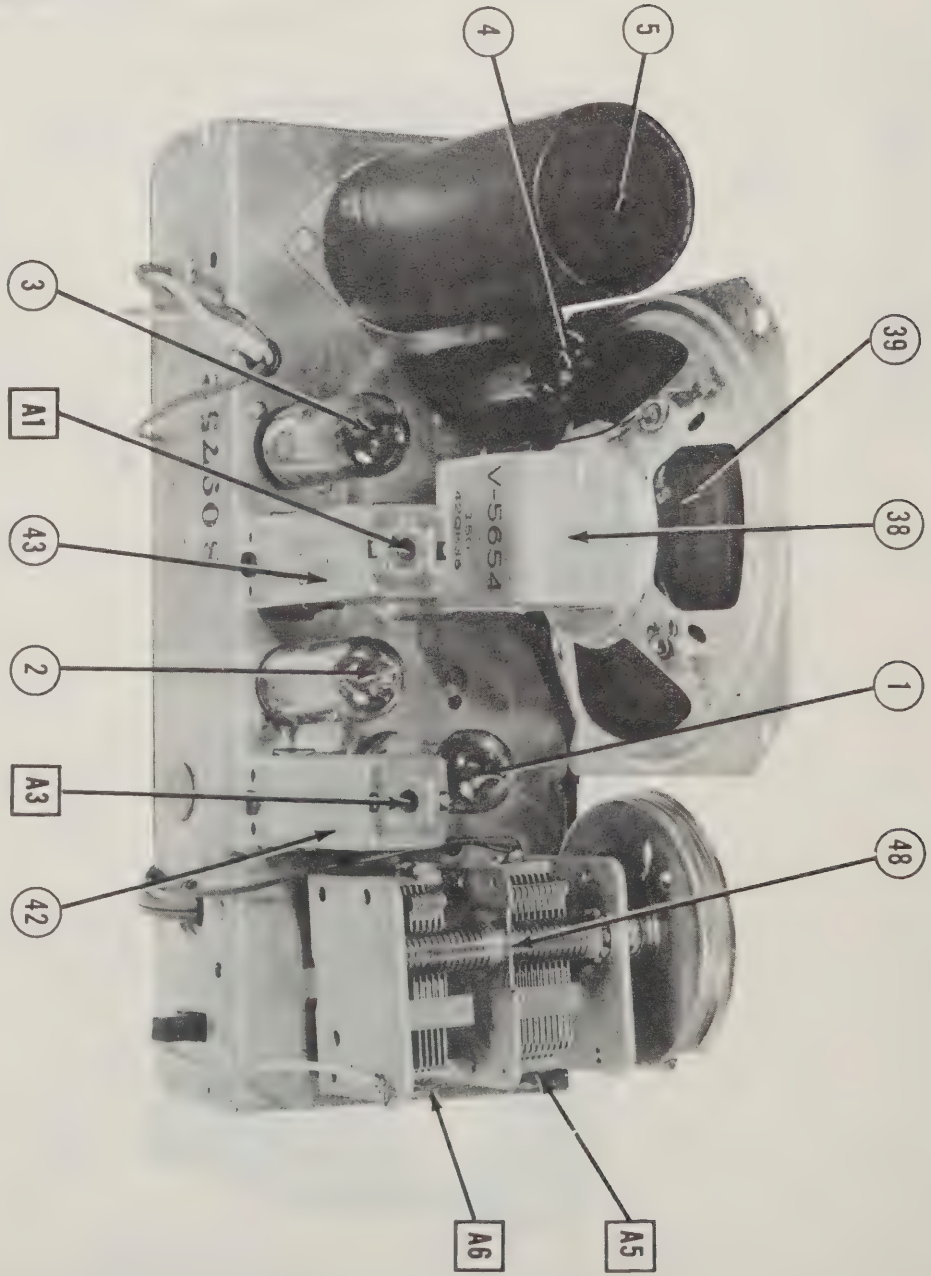
Note-Part number V-5666-1 used on Ch. V-2131.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	IRC PART No.	IDENTIFICATION CODES
20	2.2 Meg.	½	RC10AE225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
21	100KΩ	½	RC10AE104M	BTS-100K	Br.-Blk.-Yl. Osc. Grid
22	3.3 Meg.	½	RC10AE335M	BTS-3.3 Meg.	Or.-Or.-Grn. IF Grid
23	8200Ω	½	RC20AE822K	BTS-8200	Gray-Red-Red Screen Decoupling
24	10 Meg.	½	RC10AE106M	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
25	3.3 Meg.	½	RC10AE335M	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen
26	470KΩ	½	RC10AE474M	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
27	1.5 Meg.	½	RC10AE155M	BTS-1.5 Meg.	Br.-Grn.-Grn. Output Grid
28	220Ω	½	RC10AE221K	BW-½-220	Red-Red-Br. Bias
29	1000Ω	½	RC10AE102K	BTS-1000	Br.-Blk.-Red Filament String
30	1000Ω	½	RC10AE102K	BTS-1000	Br.-Blk.-Red " "
31	1000Ω	½	RC10AE102K	BTS-1000	Br.-Blk.-Red " " "
32A	1200Ω	10		ABA-2250	Filament Dropping-See Note 1
B	1200Ω	10			" " " " " "
33	4700Ω	1		BTA-4700	Yl.-Vi.-Red " " " " "
34	3300Ω	½	RC20AE332M	BTS-3300	Or.-Or.-Red Filter
35	18Ω	4	V-6067-1	AB-150	Surge Limiter-See Note 2
36	220KΩ	½	RC10AE224M	BTS-220K	Red-Red-Yl. Line Isolation

Note 1-On some models Items 32A and 32B change to 900Ω each and Item 33 is ommitted.
Note 2-Some models use two 68Ω 2W resistor in series in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WESTINGHOUSE	STANCOR	THORDAR'N	MERIT	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
37	4100Ω	3.3Ω	250Ω	.2Ω	V-5654	A-3328		A-2998	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WESTINGHOUSE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-113		
38	PM	3.3Ω	V-5654	Mod. P4-X	4A07	
	CONE DIA.	VC DIA.				
39	4"	9/16"				

R F COILS

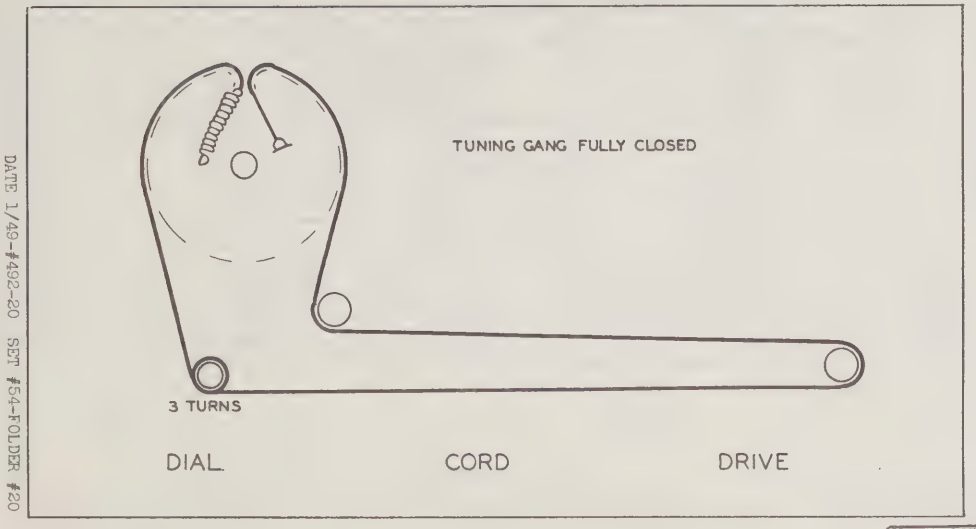
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WESTINGHOUSE PART No.	MEISSNER PART No.	
40	Loop Ant.		3.4Ω	V-5681-2		
41	Osc. Coil	2.7Ω	12.5Ω	V-5661	14-1060*	*Add 50 MMFD from high side tuning cap. to osc. grid.
42	Input IF	22Ω	22Ω	V-5663-2	16-6678	
43	Output IF	22Ω	22Ω	V-5663-2	16-6678	

BATTERIES

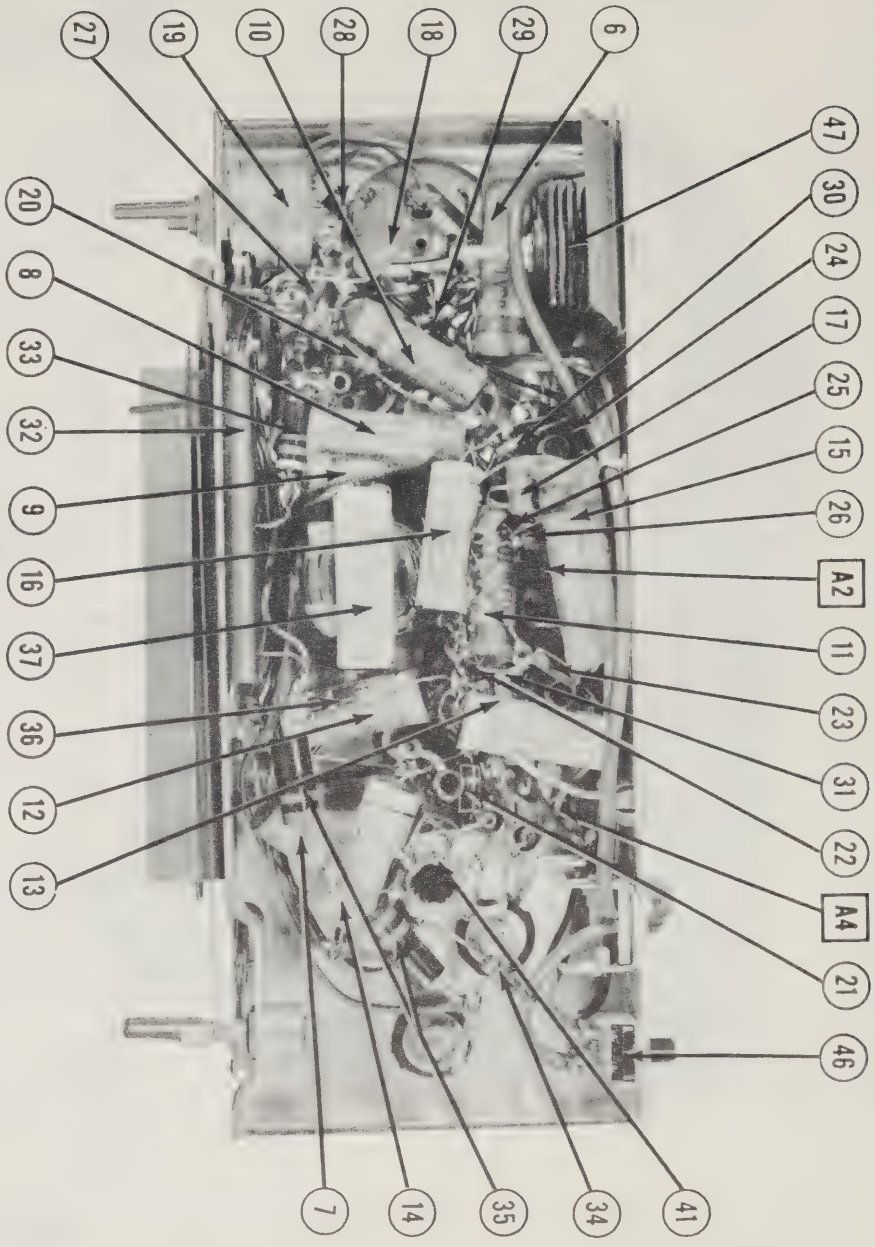
ITEM No.	VOLTAGE	WESTINGHOUSE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
44	7.5V "A"	V-5696-1	935			1			5 Used in series
45	67.5V"B"	V-5009		467			XX45		

MISCELLANEOUS

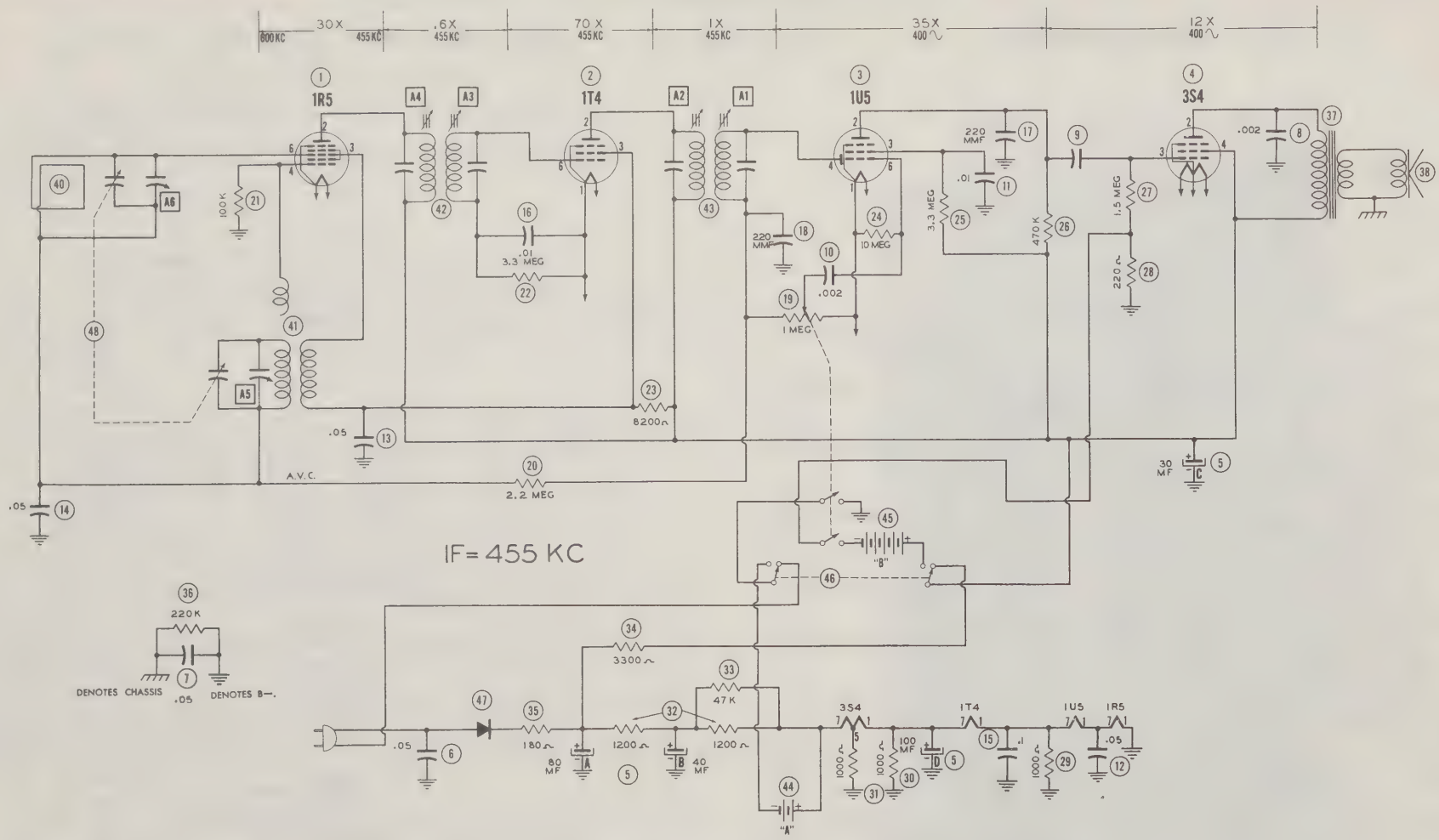
ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
46	Switch	V-5406	AC/DC-Battery
47	Rectifier	V-4115	Selenium
48	2 Gang Var. Cap.	V-5651	(24-378MMFD, 16-108MMFD)
	Dial	V-5832-1	H-195
	Dial Pointer	V-5650	



CHASSIS—BOTTOM VIEW



WESTINGHOUSE MODELS H-185, H-195



VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	6.3VDC	45VDC	-6.6VDC	0V.	0V.	1.2VDC
2	1T4	2.4VDC	63VDC	45VDC	0V.	2.4VDC	.2VDC	3.6VDC
3	1U5	1.2VDC	33VDC	11.5VDC	.2VDC	0V.	0V.	2.4VDC
4	3S4	3.8VDC	60VDC	0V.	63VDC	5VDC	60VDC	6.3VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	5KΩ	13KΩ	100KΩ	0Ω	3.2 Meg.	*
2	1T4	*	5KΩ	13KΩ	INF.	*	3.3 Meg.	*
3	1U5	*	470KΩ	3.3 Meg.	1 Meg.	3.2 Meg.	10 Meg.	*
4	3S4	*	5KΩ	1.7 Meg.	5KΩ	*	5KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

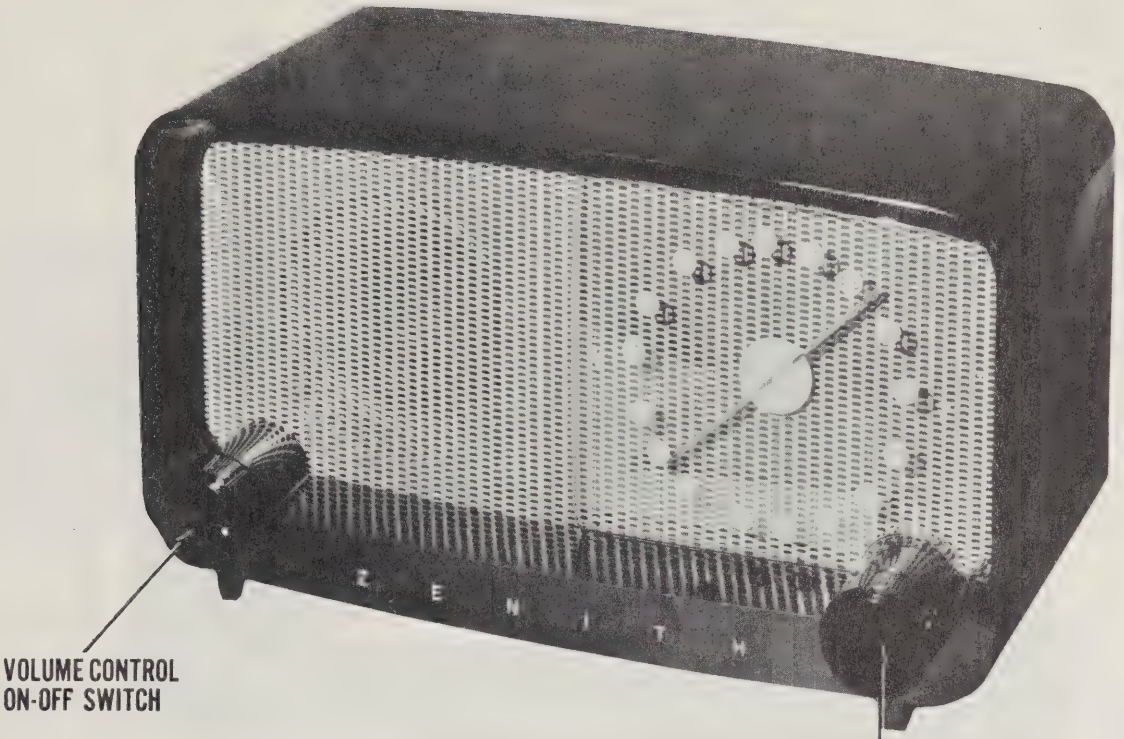
© Howard W. Sams & Co., Inc. 1949

492-20

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to B-.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

ZENITH MODEL
5D810 (Ch. 5E02)



ZENITH MODEL
5D810 (Ch. 5E02)

ZENITH MODEL 5D810

TRADE NAME	Zenith, Model 5D810 (Ch. 5E02)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES(FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50L6GT Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	535-1620KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

There is an auxiliary dial scale on dial cord pulley. Turn tuning cap. fully closed and put pencil mark on condenser frame opposite closed line. This is the 1600KC mark on aux. dial. To set dial pointer install receiver in cabinet, turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. A special alignment wrench (Zenith Part #68-7) is necessary to adjust A1 thru A4.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.5 MFD	High side to Pin 7 (grid) of 12BE6. Low side to B-.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2		Loop	1600KC	1600KC on auxiliary dial	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-21 SET #54-FOLDER #21

PARTS LIST AND DESCRIPTIONS

ZENITH MODEL 5D810

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	60	150	22-1807	AF844D*	UP42215*	DY-604020-150†	EL-224*	■ Filter-See Note ▲ ■
B	20	150						
7	.047	400	22-1775	484-05	GT4S5	ST-4-05	TC-15	Line Filter
8	.02	400	22-1379	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
9	.01	600		684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
10	.05	200	22-1158	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
11	.07	200	22-1158	484-075	GT2S5	ST-4-05	72P1	Line Isolation
12	.05	200	22-1158	484-05	GT2S5	ST-4-05	TC-15	AVC Filter-See Note
13A	500	300	105-15	1468-0005	5W5T5	M0.5-35	1FM-35	AF Plate Bypass-Cer.
B	7000	300		1467-008	1D3D7	MW.3-27	1FM-27	Audio Coupling-Cer.
14	100	500	22-162	1468-0001	5W5T1	M0.5-35	1FM-31	Osc. Grid Cap.

*Parallel sections to obtain desired capacity.
†Omit 40 MFD. section.
Note-If Zenith Part #22-1807 is not used as replacement of Item 6A, B; Item 12 must be added.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15A	1 Meg.	½	63-1660	D11-133	AM-61-S	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 15A per instructions
C	Switch		" "	41	SW-A	" " " " "

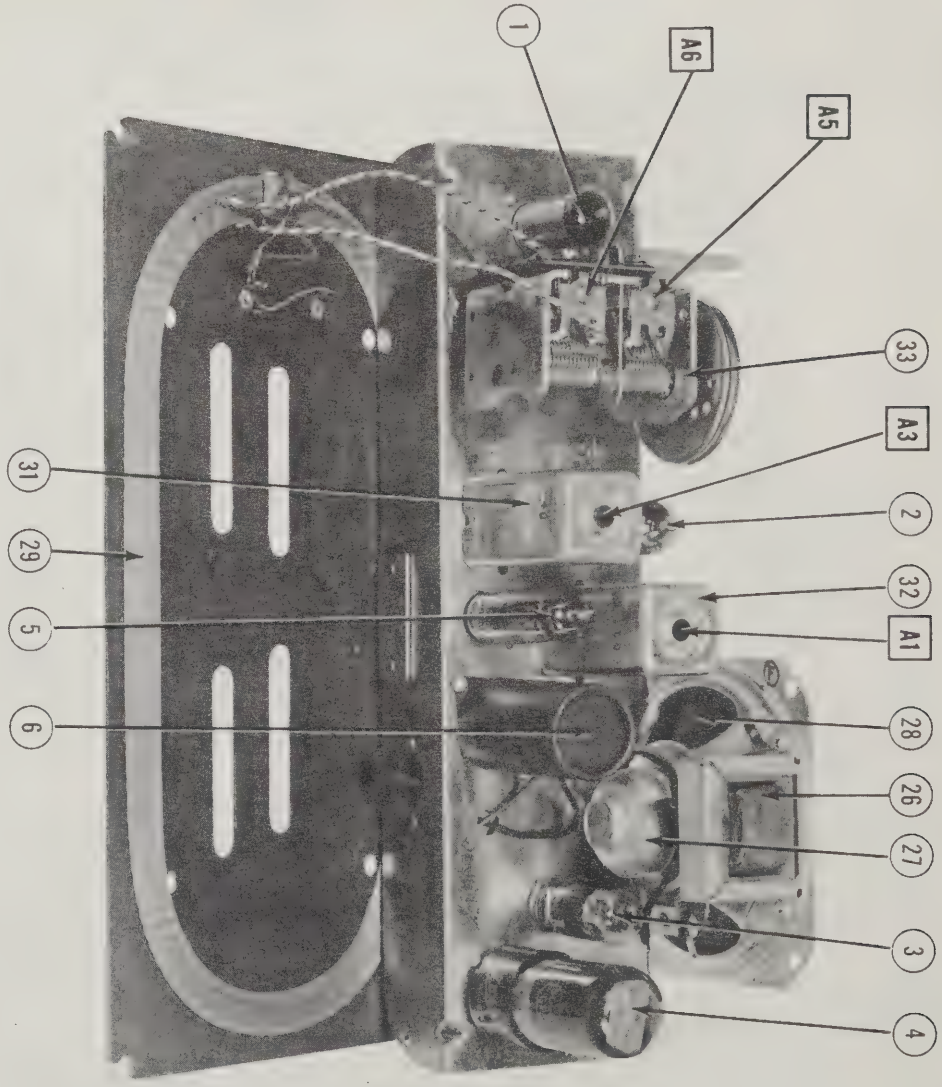
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
16	10KΩ	½	63-1828	BTS-10K	Br.-Blk.-Or. Osc. Grid
17	2.2 Meg.	½	63-1926	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
18	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
19	470KΩ	½	63-1898	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
20	470KΩ	½	63-1898	BTS-470K	Yl.-Vi.-Yl. Output Grid
21	150Ω	½	63-686	BW-½-150	Br.-Grn.-Br. Output Cathode
22	1000Ω	1	63-1574	BTA-1000	Br.-Blk.-Red Filter
23	22Ω	½	63-1219	BW-½-22	Red-Red-Blk. Surge Limiter
24	39Ω	2	63-1575	BW-2-39	Or.-White-Blk. Line Dropping
25	68Ω	½	63-1737	BW-½-68	Blue-Gray-Blk. IF Cathode

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
26	2000Ω	3.3Ω	180Ω	.5Ω	206-645	A-3876	T22845	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

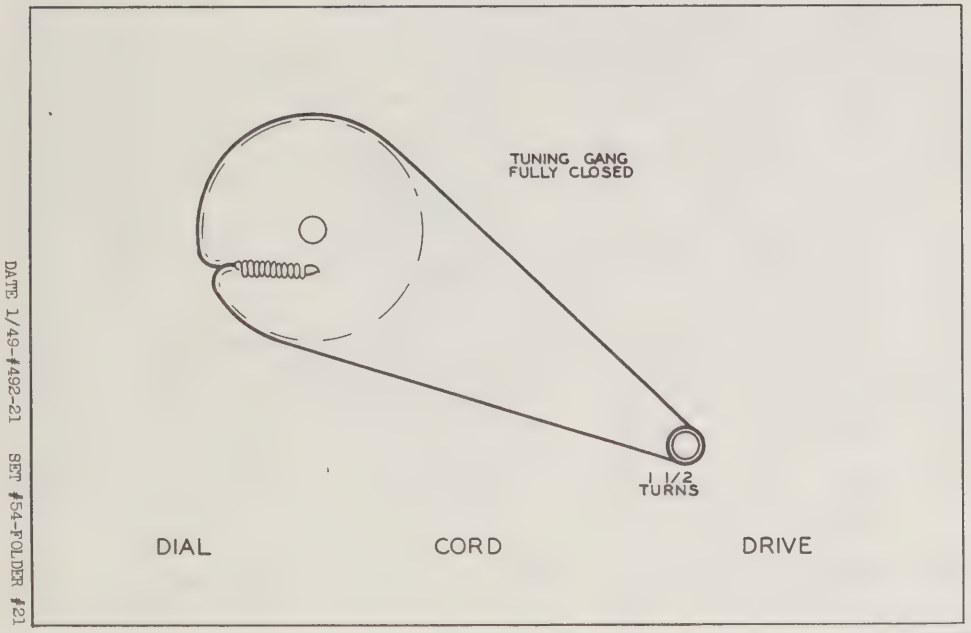
ITEM No.	RATINGS		REPLACEMENT DATA: ZENITH PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
27	FIELD / PM	VC IMP. / 3.3Ω	49-645	ST-113 Mod. P4-X	4A07	
28	CONE DIA. / 4"	VC DIA. / 9/16"	208-645			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	MEISSNER PART No.	
29	Loop Ant.		2.5Ω	S14879		
30	Osc. Coil	.6Ω	5Ω	S14842	14-1060	
31	Input IF	20Ω	20Ω	95-1101		
32	Output IF	20.5Ω	20.5Ω	95-1102		

MISCELLANEOUS

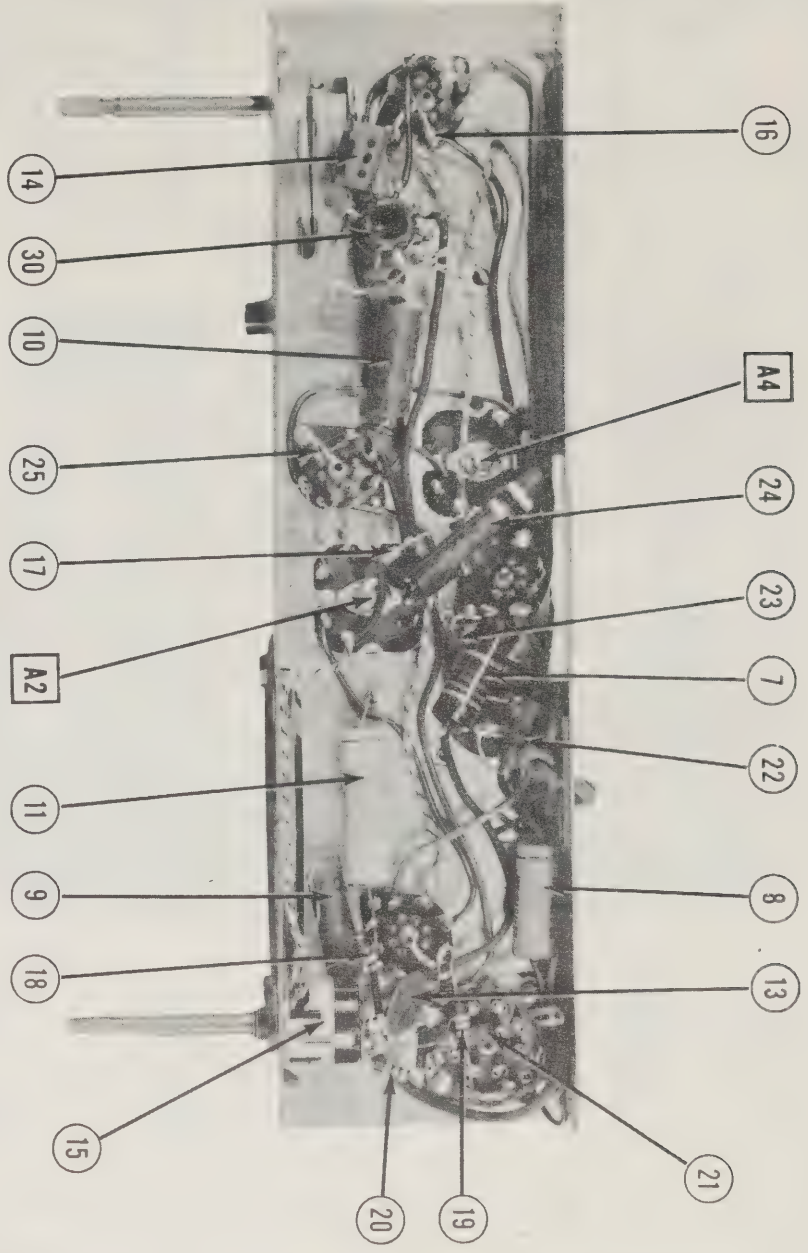
ITEM No.	PART NAME	ZENITH PART No.	NOTES
33	2 Gang Var. Cap.	22-1807	(30-457MMF, 32-198MMF)
	Dial Scale	26-415	
	Dial Pointer	59-222	
	Cabinet	14-1010	
	Knob	46-745Y	



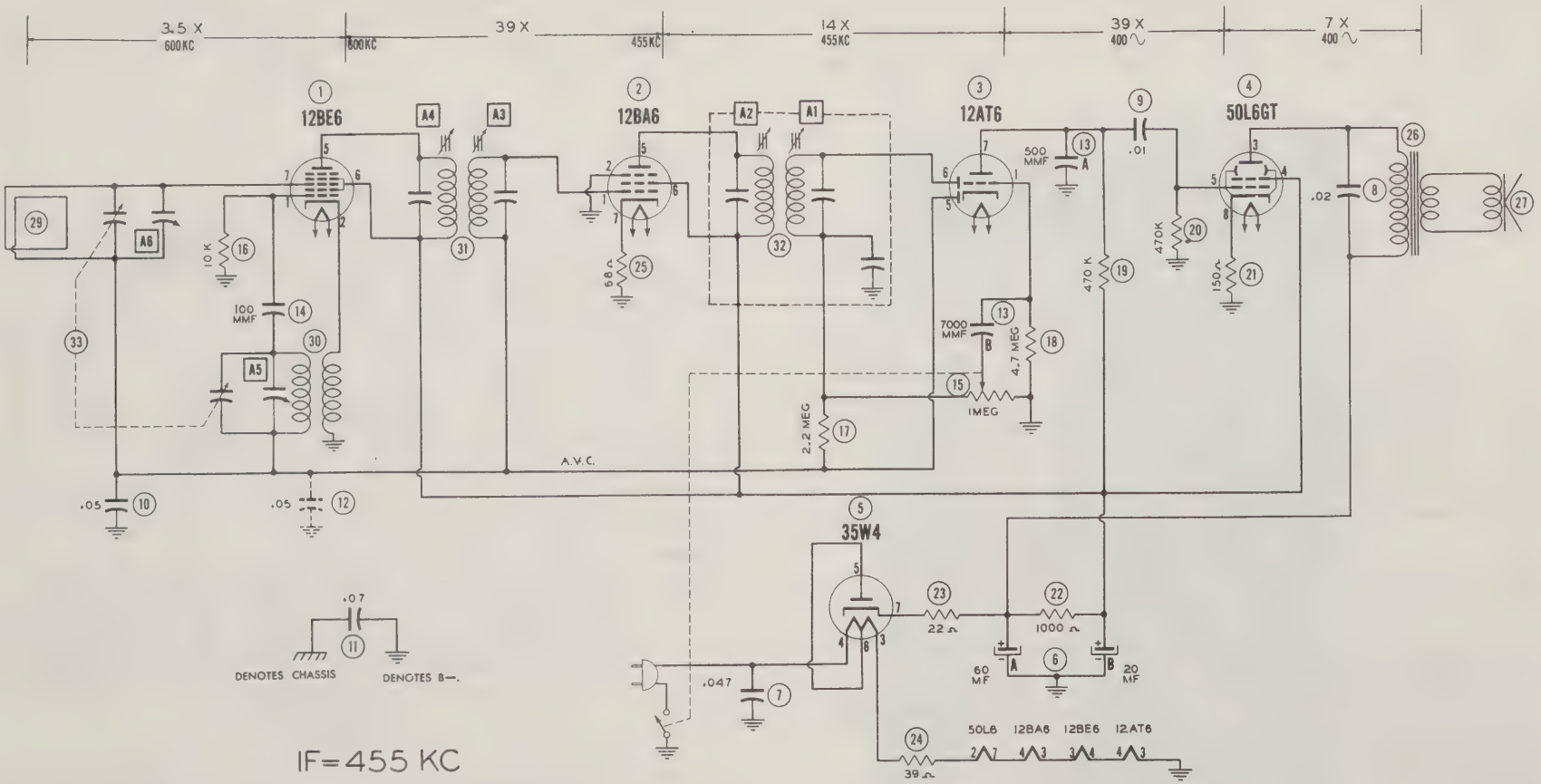
DATE 1/49-#492-21 SET #54-FOLDER #21

ZENITH MODEL 5D810

CHASSIS—BOTTOM VIEW



ZENITH MODEL 5D810



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12BE6	-5.6VDC§	0V.	24VAC	11VAC	90VDC	90VDC	-.4VDC	-
2	12BA6	-.4VDC	0V.	24VAC	36VAC	90VDC	90VDC	.7VDC	-
3	12AT6	-.8VDC	0V.	0V.	11VAC	-.4VDC	-4.4VDC	34VDC	-
4	50L6GT	-.1VDC	85VAC	11VDC	90VDC	0V.	0V.	36VAC	5.5VDC
5	35W4	85VAC	0V.	92VAC	115VAC	115VAC	117VAC	118VDC	-

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12BE6	10KΩ	.6Ω	24Ω	12Ω	60KΩ	60KΩ	3.2 Meg.	-
2	12BA6	3.2 Meg.	0Ω	24Ω	36Ω	60KΩ	60KΩ	68Ω	-
3	12AT6	4.7 Meg.	0Ω	0Ω	12Ω	3.2 Meg.	1 Meg.	530KΩ	-
4	50L6GT	4.5 Meg.	85Ω	60KΩ	60KΩ	470KΩ	INF.	36Ω	150Ω
5	35W4	85Ω	INF.	120Ω	155Ω	155Ω	150Ω	60KΩ	-

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

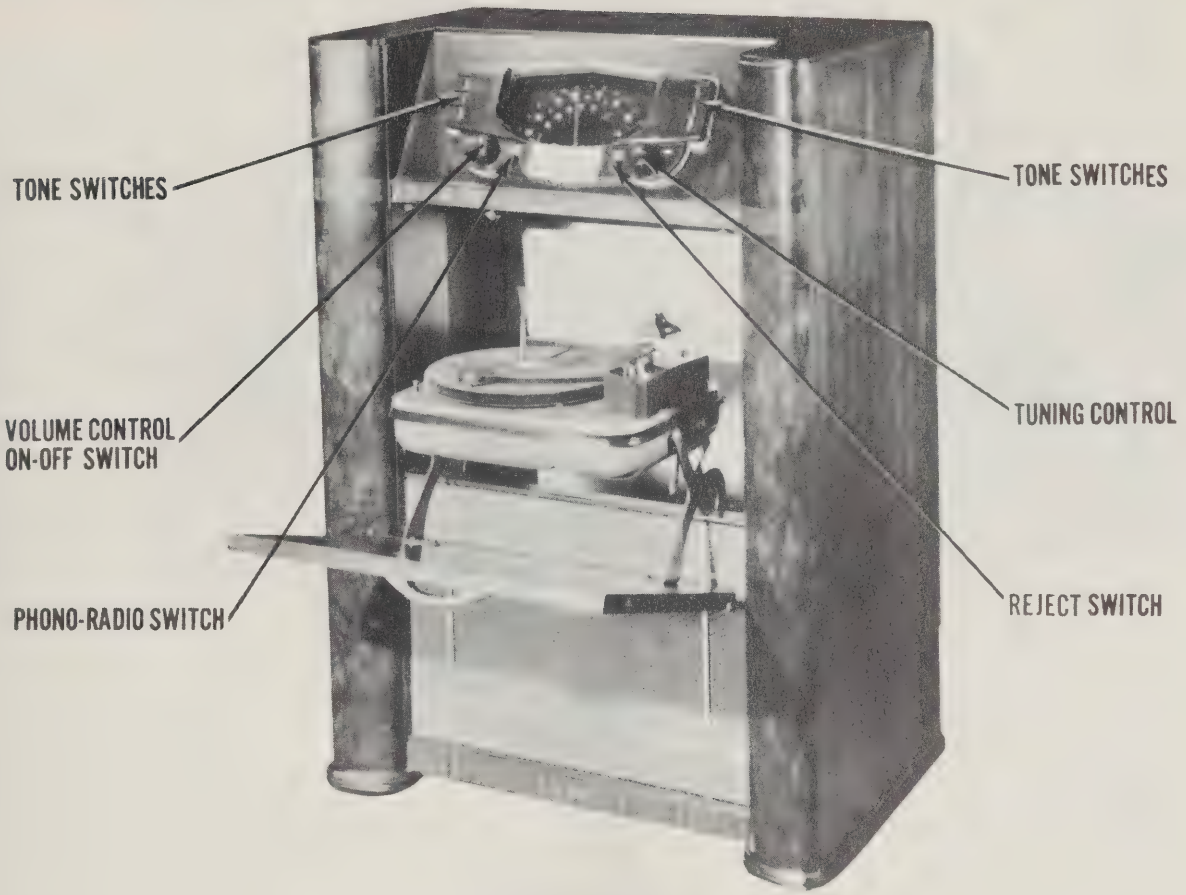
©Howard W. Sams & Co., Inc. 1949

492-21

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ZENITH MODEL
7R887 (Ch. 7E22)



ZENITH MODEL
7R887 (Ch. 7E22)

ZENITH MODEL 7R887

TRADE NAME	Zenith, Model 7R887 (Ch. 7E22)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (SEVEN)	Types, 6SK7 RF Amp., 6SA7GT Converter, 6SK7 IF Amp., 6J5 Phono Osc., 6SQ7GT Det.-AVC-AF, 6K6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1620KC RATING .44 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cap. fully closed and set pointer to calibration mark at low frequency end of dial scale.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.5 MFD.	High side to Pin 8 (Conv. Grid) of 12SA7. Low side to chassis.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust A5 for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6,A7	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

ZENITH MODEL 7RS67

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7	6SK7	8N	
4	Phono Osc.	6J5	6J5	6Q	
5	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
6	Power Output	6K6GT	6K6GT	7S	
7	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	40	450	22-1720		UP4445C#	DY-314#	D5172#	◓ Filter
B	40	450						■ "
C	40	25						▲ Cathode Bypass
9	16	300	22-1755	PRS350/16	BR1635	M-16-450	UT-163	Decoupling
10	.005	400	22-1041	484-005	GT6D5	ST-6-005	TC-25	Line Filter
11	.006	600	22-458	684-006	GT6D6	ST-6-006	TC-26	Tone Compensation
12	.05	600	22-171	684-05	GT6S5	ST-6-05	TC-15	Audio Coupling
13	.01	400	22-243	484-01	GT4S1	ST-4-01	TC-11	" "
14	.02	400	22-188	484-02	GT4S2	ST-4-02	TC-12	" "
15	.2	200	22-1531	484-.2	GT4P2	ST-4-2	TC-[illegible]	Tone Compensation
16	.001	600	22-887	684-001	GT6D1	ST-6-001	TC-21	" "
17	.0005	600	22-854	1468-0005	GT6T5	ST-6-0005	TC-35	AF Plate Bypass
18	.02	600	22-830	684-02	GT6S2	ST-6-02	TC-12	Phono Osc. Coupling
19	.0005	600	22-854	1468-0005	GT6T5	ST-6-0005	TC-35	Fixed Trimmer-See Note
20	.002	600	22-492	684-002	GT6D2	ST-6-002	TC-22	Tone Comp.-See Note
21	.002	600	22-492	684-002	GT6D2	ST-6-002	TC-22	Audio Coupling-See Note
22	.1	200	22-1418	484-.1	GT2P1	ST-2-1	TC-1	Phono Osc. Grid Cap.
23	.05	200	22-829	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
24	.05	600	22-171	684-05	GT6S5	ST-6-05	TC-15	Screen Bypass
25	.05	200	22-829	484-05	GT4S5	ST-4-05	TC-15	Ant. Coupling
26	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Tone Compensation
27	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	" "
28	75	300		1468-000075	5W5Q7	MOS.5-47	1FM-47S	Phono Osc. Feedback-Cer.
29	50	200	22-1761	1468-00005	5W5Q5	MO.5-45	1FM-45	" " " "
31	12	500	22-530					Fixed Trimmer-Silver

#Filter is special non-inductive capacitor. If other than Zenith part is used, it will be necessary to add parts as shown in dotted lines on schematic diagram.

Note-In some models, Items 19, 20, 21 are combined into one unit obtainable under Manufacturers Part #105-16.

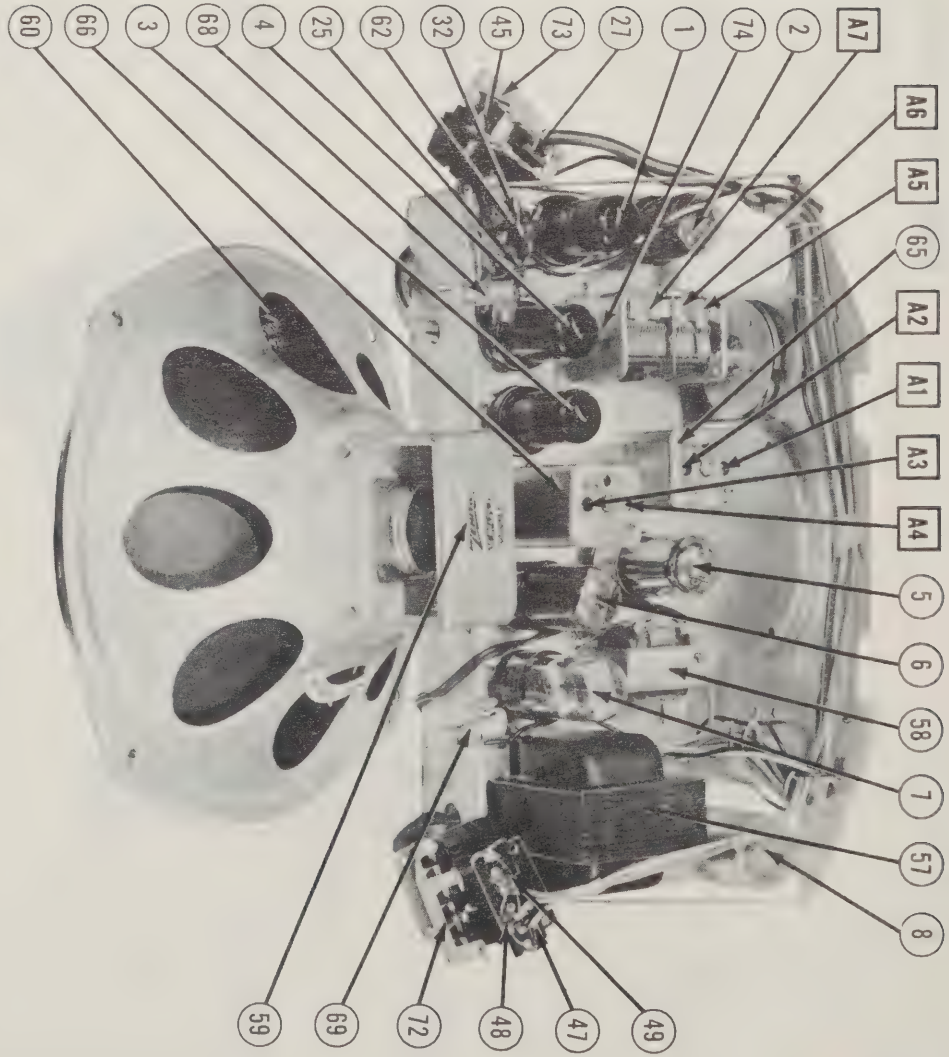
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
31A	1 Meg.	½	63-1648	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 31A per Instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
32	1 Meg.	½	63-1912	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
33	10KΩ	1	63-1071	BTA-10K	Br.-Blk.-Or. RF Plate Load
34	220Ω	½	63-1758	BW-½-220	Red-Red-Br. Parasitic Suppressor
35	10KΩ	½	63-1828	BTS-10K	Br.-Blk.-Or. Osc. Grid
36	8.2 Meg.	½	63-1950	BTS-8.2 Meg.	Gray-Red-Grn. " "
37	10KΩ	1	63-1071	BTA-10K	Br.-Blk.-Or. Screen Dropping
38	220KΩ	½	63-1884	BTS-220K	Red-Red-Yl. IF Grid
39	22KΩ	½	63-1842	BTS-22K	Red-Red-Or. IF Screen
40	6800Ω	2	63-1571	BT-2-6800	Blue-Gray-Red Decoupling
41	2.2 Meg.	½	63-1926	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
42	220KΩ	½	63-1884	BTS-220K	Red-Red-Yl. Diode Load
43	15 Meg.	½	63-1961	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
44	220KΩ	½	63-1884	BTS-220K	Red-Red-Yl. AF Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

45	820KΩ	½	63-1908	BTS-820K	Gray-Red-Yl. Tone Compensation
46	680Ω	½	63-1778	BTS-680	Blue-Gray-Br. " "
47	1500Ω	½	63-1792	BTS-1500	Br.-Grn.-Red Tone Compensation
48	1000Ω	½	63-1785	BTS-1000	Br.-Blk.-Red " "
49	4700Ω	½	63-1813	BTS-4700	Yl.-Vi.-Red " "
50	470KΩ	½	63-1898	BTS-470K	Yl.-Vi.-Yl. Output Grid
51	470Ω	1	63-1222	BTA-470	Yl.-Vi.-Br. Output Cathode
52	2200Ω	½	63-1800	BTS-2200	Red-Red-Red Tone Compensation
53	2700Ω	2		BT-2-2700	Red-Vi.-Red Filter
54	1 Meg.	½	63-1911	BTS-1 Meg.	Br.-Blk.-Grn. Phono Osc. Grid
55	47KΩ	½	63-1855	BTS-47K	Yl.-Vi.-Or. Phono Osc. Plate
56	47KΩ	½	63-1855	BTS-47K	Yl.-Vi.-Or. Phono Osc. Coup. Net.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC.-3	ZENITH PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
57	117V AC @ .44A	570V CT .08ŞA DC	6.7V AC @ 2.9A		95-1094	P-6119‡*		P-3148‡

‡Drill new mounting holes. *Mount vertically with universal mounting brackets.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
58	5500Ω	3.4Ω	600Ω	.37Ω	95-1093	A-3823	T-2846§	A-2902	§Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
59	FIELD	VC IMP.	40-636	ST-120† Mod. P10-S	10A31	†Replace output transformer to match 6-8Ω voice coil.
	PM	3.4Ω				
60	CONE DIA. 9-3/8"	VC DIA. 1"	208-636			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
61	Loop Ant.		0Ω			
62	Loop Load. Coil		2.5Ω	S-14195		
63	RF Coil	2Ω	9.5Ω	S-11163		
64	Osc. Coil	.8Ω	6Ω	S-14654	14-1060**	**Add 50 MMFD from high side tuning cap. to osc. grid.
65	Input IF	10Ω	10Ω	95-1091	16-5712	
66	Output IF	30Ω		95-1092	16-6670	
67	Phono Osc. Coil		2Ω	S-12603		

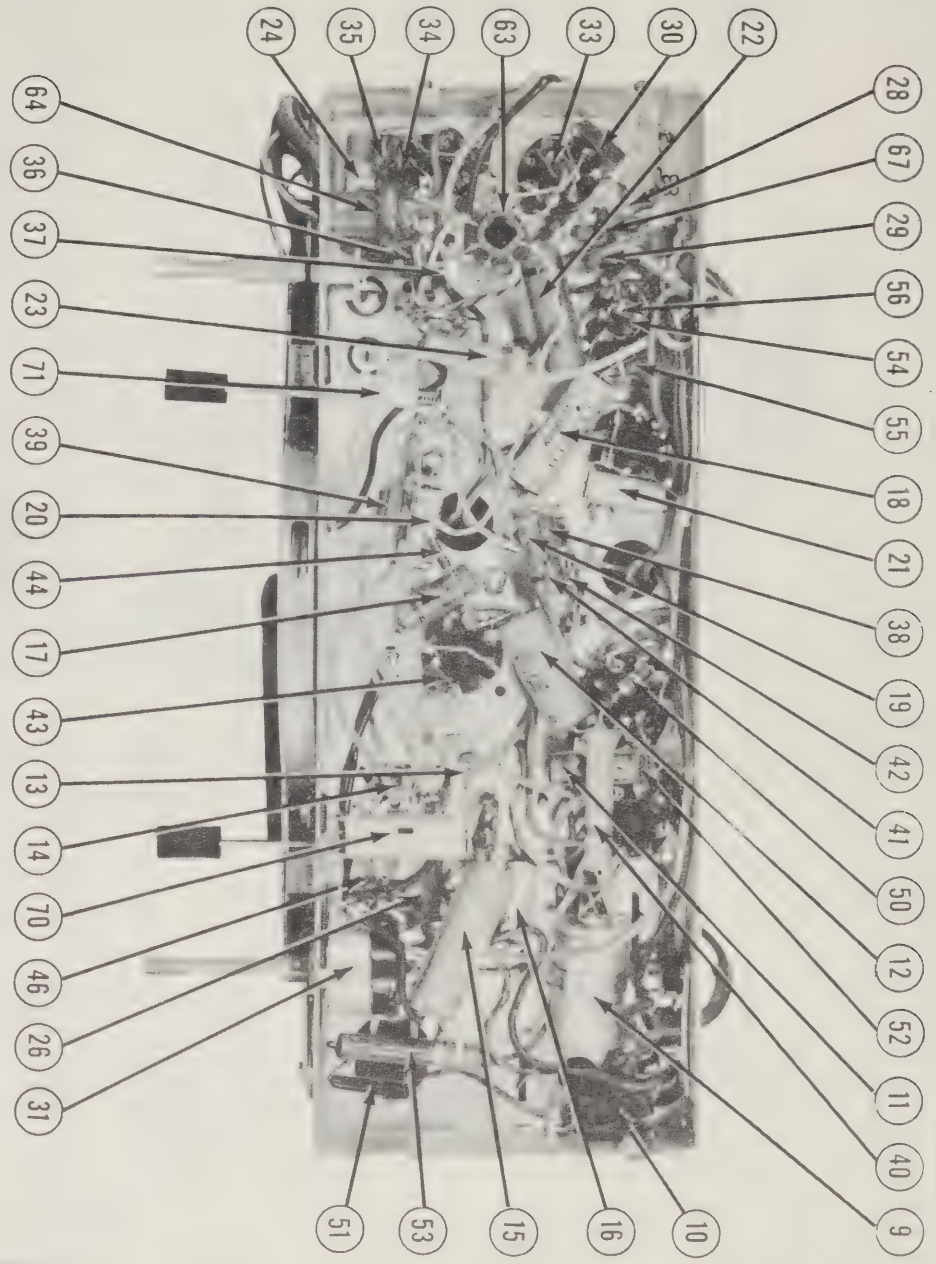
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ZENITH PART No.		
68	Bayonet	6-8	0.25	Blue	100-36		Type 44
69	"	6-8	0.25	"	100-36		" "

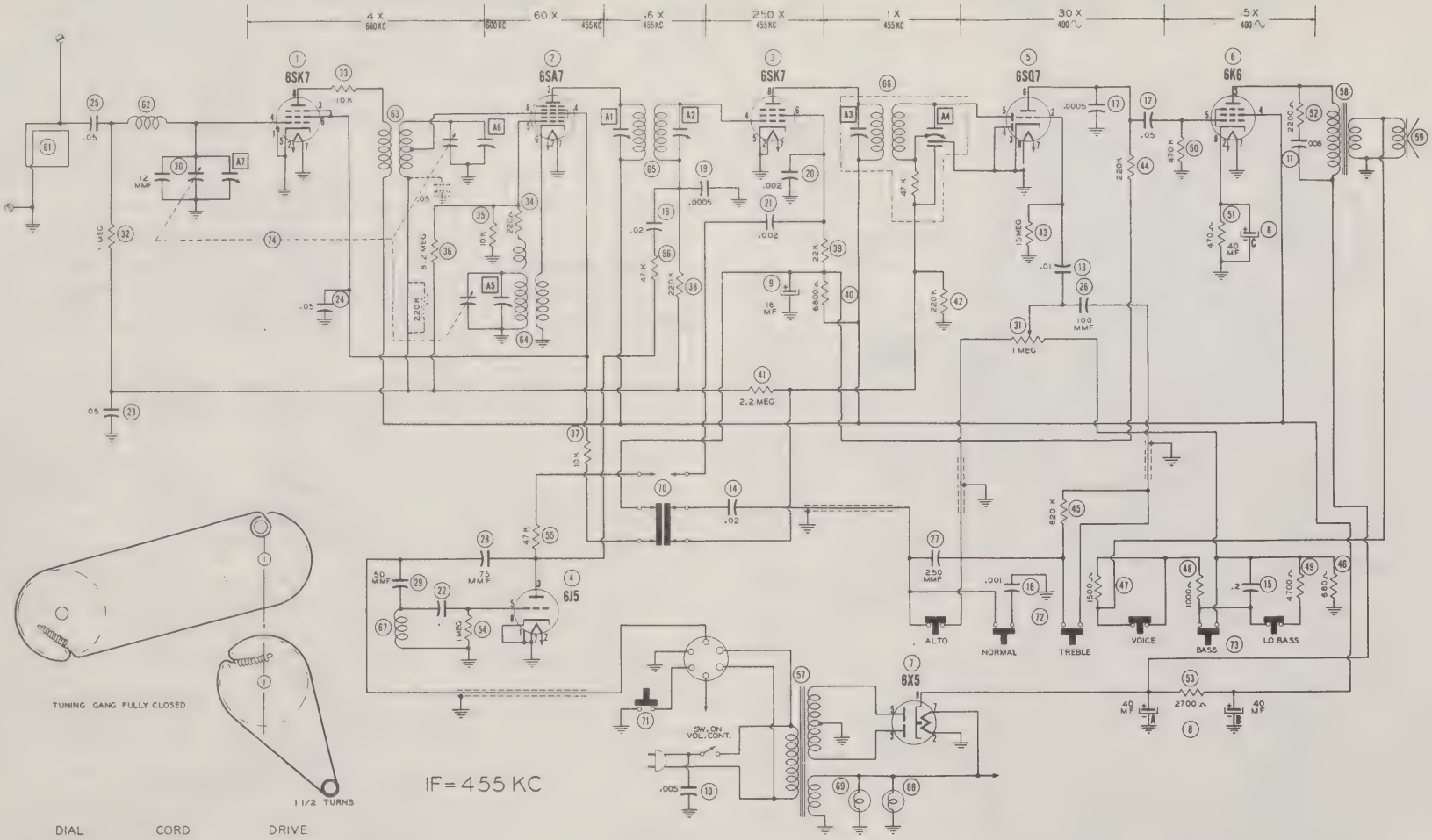
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
70	Switch	85-425	Phono-Radio
71	"	85-422	Reject
72	"	S-14261	Radiorgan (LH)
73	"	S-14261	" (RH)
74	3 Gang Var. Cap.	22-1772	(22-492MMF, 13-210MMF, 14-88MMF)
	Dial Scale	26-402	
	Dial Pointer	59-213	
	Knob	46-726	Phono Switch
	Dial Crystal	192-119	

CHASSIS—BOTTOM VIEW



ZENITH MODEL 7R88?



VOLTAGE READINGS

RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	65VDC	-.2VDC	0V.	65VDC	6.7VAC	150VDC
2	6SA7GT	0V.	6.7VAC	220VDC	6.5VDC	-5.1VDC§	0V.	0V.	-.5VDC
3	6SK7	0V.	6.7VAC	220VDC	-.8V.C	0V.	90VDC	6.7VAC	220VDC
** 4	6J5	0V.	0V.	80VDC	50VDC	-.6VDC	185VDC	6.7VAC	0V.
5	6SQ7GT	0V.	-.5VDC	0V.	0V.	-.5VDC	85VDC	6.7VAC	0V.
6	6K6GT	0V.	0V.	250VDC	220VDC	0V.	0V.	6.7VAC	16VDC
7	6X5GT	0V.	0V.	285VAC	290VDC	285VAC	145VDC	6.7VAC	300VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

**TAKEN IN PHONO POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	90KΩ	3 Meg.	0Ω	1.0KΩ	.1Ω	81KΩ
2	6SA7GT	0Ω	.1Ω	70KΩ	80KΩ	10KΩ	.5Ω	0Ω	1 Meg.
3	6SK7	0Ω	0Ω	0Ω	2.6 Meg.	0Ω	1.0KΩ	.1Ω	72KΩ
** 4	6J5	0Ω	0Ω	120KΩ	120KΩ	1 Meg.	35KΩ	.1Ω	0Ω
5	6SQ7GT	0Ω	15 Meg.	0Ω	0Ω	270KΩ	270KΩ	.1Ω	0Ω
6	6K6GT	0Ω	0Ω	70KΩ	72KΩ	470KΩ	1MEG.	.1Ω	470Ω
7	6X5GT	1MEG.	0Ω	70KΩ	70KΩ	70KΩ	70KΩ	.1Ω	70KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

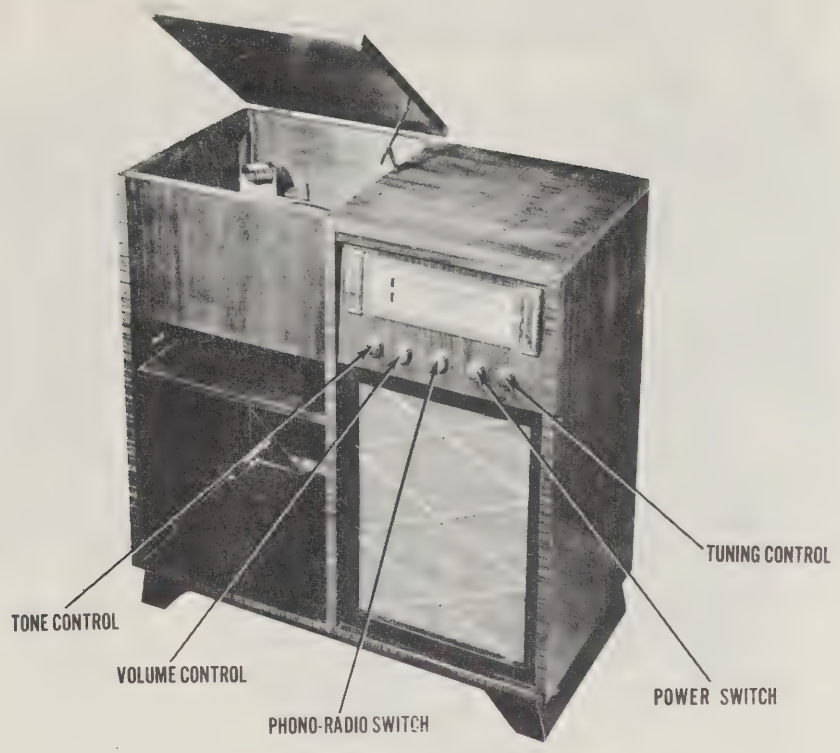
A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1949

492-22

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



AIRCASTLE MODEL 138104

TRADE NAME	Aircastle, Model 138104
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7GT Converter, 6SK7 IF Amp., 6SQ7GT Det.-AVC-AF, 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1725KC RATING .44 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2	250MMFD.	High side to ext. antenna terminal. (With link connected for ant. operation). Low side to chassis.	1725KC	"	"	A5	" " " "
3	250MMFD	"	1500KC	Tune for maximum output.	"	A6,A7	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove five push-on type control knobs.
2. Remove the wood screws holding loop antenna to rear of cabinet.
3. Remove loop leads from loop antenna. Remove loop from cabinet.
4. Disconnect speaker leads.
5. Disconnect phono-motor leads.
6. Disconnect phono-pickup leads.
7. The dial pointer must be removed from the pointer rail assembly and cabinet before the chassis can be taken from the cabinet. This can be done by detaching the dial cord from the pointer and sliding the pointer to the right (viewed from the rear of the cabinet) as far as it will go. The dial pointer can now be removed from the cabinet.
8. Remove four hex head machine screws holding chassis in cabinet. Remove chassis from cabinet.
9. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

AIRCASTLE
MODEL 138104

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRCASTLE PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
7	16	450	A18-274	PRS450/16	BR1645	M-16-450	UT16	Filter
8	16	450	A18-279	PRS450/16	BR1645	M-16-450	UT16	"
9	.01	1000	A16-168	1084-01	MD16S1	STM-10-01	TR-11	Output Plate Bypass
10	.01	400	A16-156	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
11	.01	400	A16-156	484-01	GT4S1	ST-4-01	TC-11	Tone Comp.
12	.01	400	A16-156	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
13	.05	400	A16-158	484-05	GT4S5	ST-4-05	TC-15	AF Plate Decoup.
14	.05	400	A16-158	484-05	GT4S5	ST-4-05	TC-15	IF Screen Bypass
15	.05	200	A16-152	484-05	GT2S5	ST-4-05	TC-15	IF Cathode Bypass
16	.05	400	A16-158	484-05	GT4S5	ST-4-05	TC-15	Mixer Screen Bypass
17	.05	200	A16-152	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
18	.05	200	A16-152	484-05	GT2S5	ST-4-05	TC-15	" "
19	.05	400	A16-158	484-05	GT4S5	ST-4-05	TC-15	RF Screen Bypass
20	.05	200	A16-152	484-05	GT2S5	ST-4-05	TC-15	RF Cathode Bypass
21	250	500	A15-176	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
22	50	500	A15-175	1469-00005	5R5Q5	MOS.5-45	MS-45	Osc. Grid Cap.
23	5	300	A83-355	1468-000005	5W5V5	MO.5-55	1FM-55	RF Coupling-Cer.
24	50	500	A15-175	1469-00005	5R5Q5	MOS.5-45	MS-45	Fixed Trimmer
25	200	500	B15-189	1469-0002	5R5T2	MOS.5-32	MS-32	" "
26	5	300	A83-355	1468-000005	5W5V5	MO.5-55	1FM-55	Ant. Coupling-Cer.

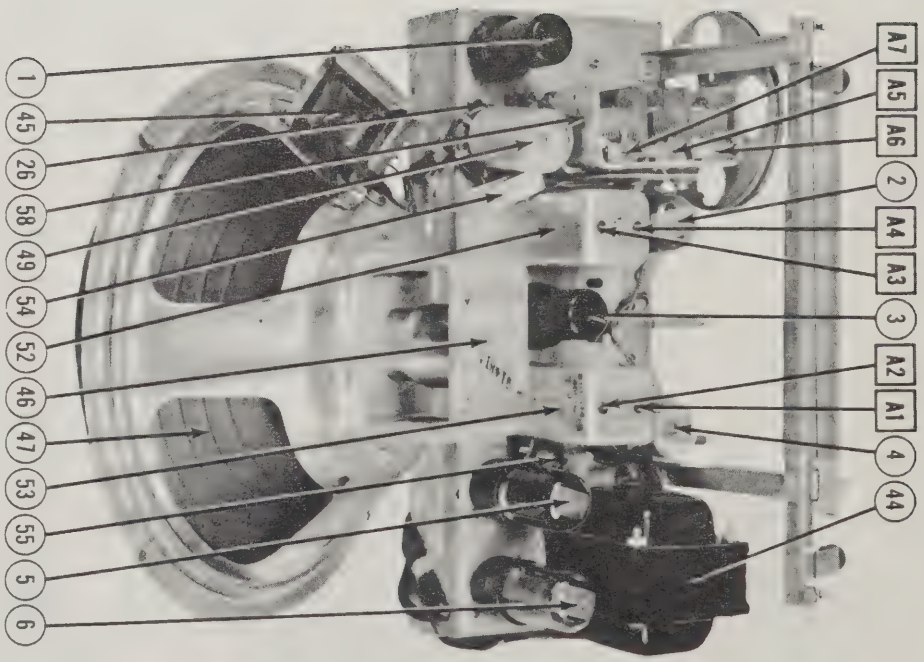
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	
27A	500KΩ	½	A24-169	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 27A per instructions
28A	3 Meg.	½	A26-123	D13-140	AM-67-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 28A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	
29	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. AVC Network
30	150Ω	½	A60-686	BW-½-150	Br.-Grn.-Br. RF Cathode
31	100KΩ	½	A60-671	BTS-100K	Br.-Blk.-Yl. RF Screen
32	27KΩ	1	A60-692	BTA-27K	Red-Vi.-Or. Mixer Screen
33	22KΩ	½	A60-659	BTS-22K	Red-Red-Or. Osc. Grid
34	150Ω	½	A60-686	BW-½-150	Br.-Grn.-Br. IF Cathode
35	100KΩ	½	A60-671	BTS-100K	Br.-Blk.-Yl. IF Screen
36	10 Meg.	½	A60-663	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
37	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. AF Plate Load
38	200KΩ	½	A60-667	BTS-220K	Red-Red-Yl. AF Plate Decoup.
39	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. Output Grid
40	560Ω	1	A60-701	BTA-560	Grn.-Blue-Br. Output Cathode
41	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. Series Phono
42	1000Ω	2	A60-699	BT-2-1000	Br.-Blk.-Red Filter
43	82KΩ	1	A60-700	BTA-82K	Gray-Red-Or. Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRCASTLE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
44	117V AC @ .44A	580V CT @ .056A DC	5.1V AC @ 2.0A	6.4V AC 1.95A	C80-223	P-6119*	T22R02	P-3160#

#Drill new mounting holes and add series resistor to reduce plate voltage.
*Mount vertically with universal mounting brackets.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
45	6900Ω	3.4Ω	390Ω	.6Ω	A80-222	A-3823	T22S47†	A-2901	†Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-119‡		‡Replace output transformer to match 6-8Ω voice coil.
46	PM	3.4Ω	B79-359	Mod. P10-T	10A31	
	CONE DIA.	VC DIA.				
47	9-3/4"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
48	Loop Ant.	0Ω		S84-204		
49	Ant. Coil	58Ω	3.5Ω	C10-459		Resistance for primary of loop is .8Ω.
50	RF Coil	65Ω	3.0Ω	B10-452		
51	Osc. Coil		7.8Ω	B10-446		
52	Input IF	20Ω	20Ω	B10-412	16-5712	
53	Output IF	18Ω		B10-444	16-6670	

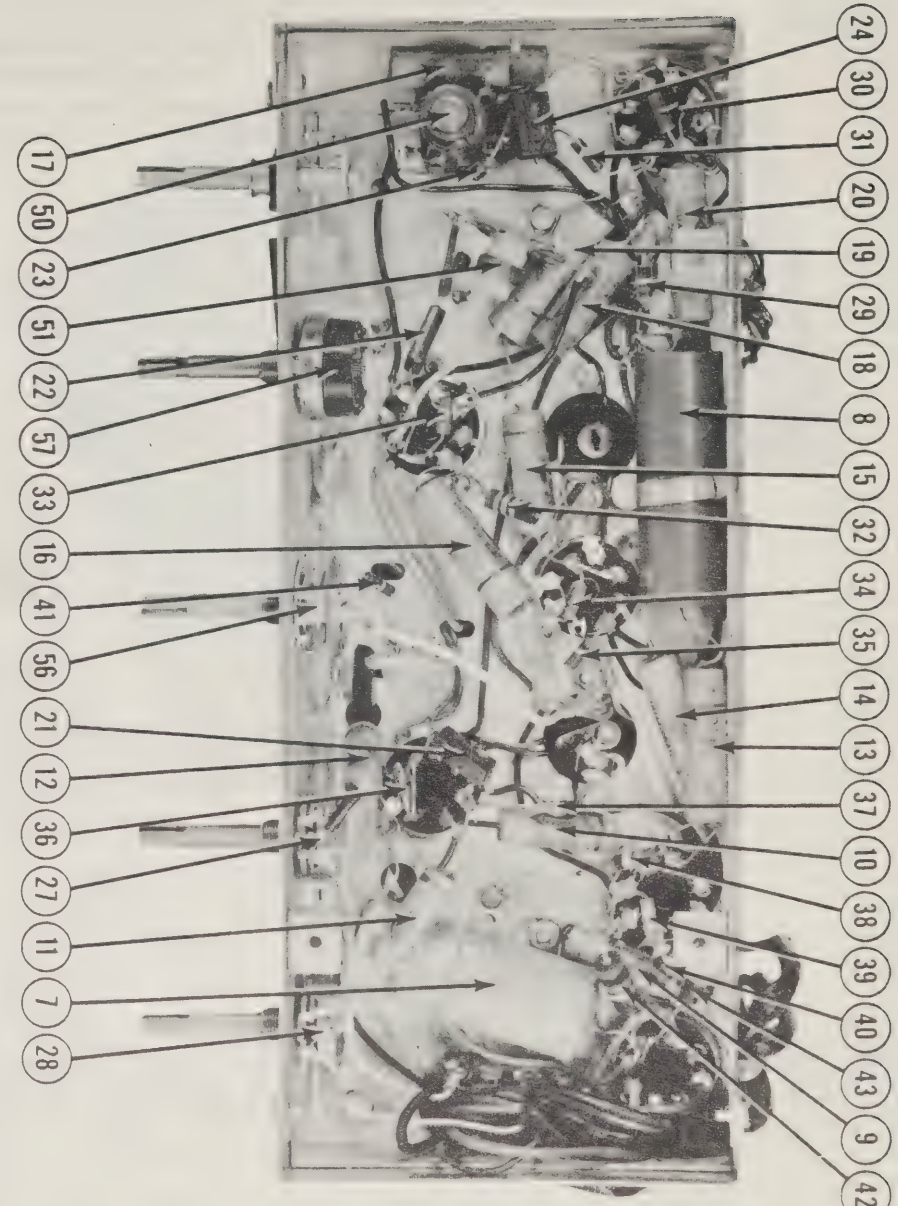
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRCASTLE PART No.		
54	Bayonet	6-8	0.25	Blue			Type 44
55	"	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
56	Switch	A65-180	Radio-Phono
57	"	A65-169	On-Off
58	3 Gang Var. Cap.	B19-186	(16-452MMF, 25-192MMF, 19-447MMF)
	Dial Scale	C67-529	
	Dial Pointer	B58-67	

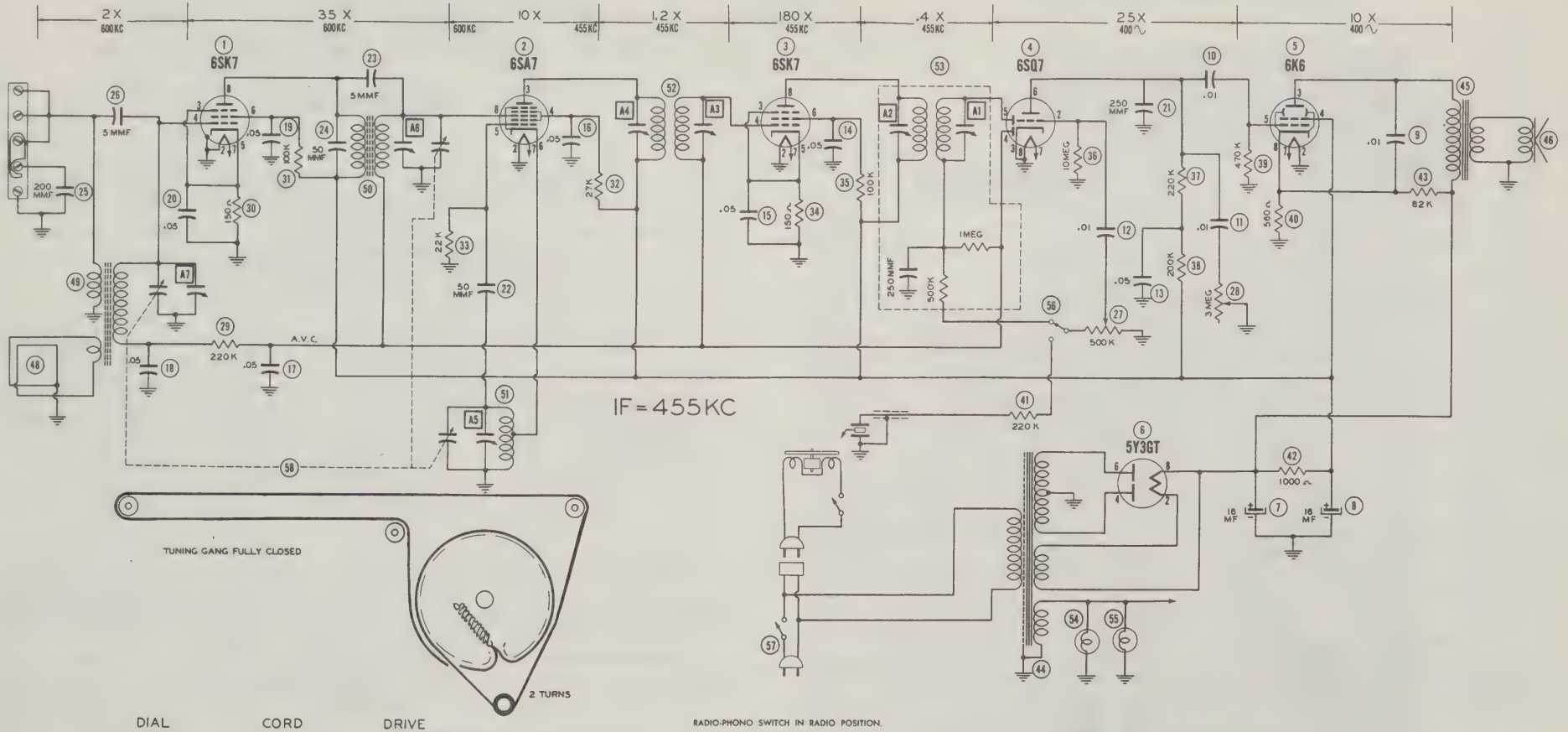
CHASSIS—BOTTOM VIEW



DATE 1/49-#492-23 SET #54-FOLDER #23

AIRCASTLE MODEL 13610-4

AIRCASTLE MODEL 13610-4



RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	1VDC	-.2VDC	1VDC	75VDC	6.4VAC	260VDC
2	6SA7GT	0V.	0V.	260VDC	65VDC	-6.4VDC§	0V.	6.4VAC	-.3VDC
3	6SK7	0V.	0V.	1.2VDC	-.3VDC	1.2VDC	80VDC	6.4VAC	260VDC
4	6SQ7GT	0V.	-.6VDC	0V.	-.3VDC	-.6VDC	100VDC	6.4VAC	0V.
5	6K6GT	0V.	0V.	250VDC	255VDC	0V.	180VDC	6.4VAC	17VDC
6	5Y3GT	0V.	310VDC	0V.	290VAC	0V.	290VAC	0V.	310VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	33KΩ	1.3 Meg.	33KΩ	100KΩ	.1Ω	6KΩ
2	6SA7GT	0Ω	0Ω	6KΩ	32KΩ	22KΩ	.5Ω	.1Ω	1.5 Meg.
3	6SK7	0Ω	0Ω	150Ω	1.5 Meg.	150Ω	100KΩ	.1Ω	6KΩ
4	6SQ7GT	0Ω	10 Meg.	0Ω	550KΩ	1.5 Meg.	450KΩ	.1Ω	0Ω
5	6K6GT	0Ω	0Ω	5KΩ	6KΩ	470KΩ	260KΩ	.1Ω	560Ω
6	5Y3GT	INF.	5KΩ	INF.	255Ω	INF.	245Ω	INF.	5KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1949

492-23

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

PHILCO
MODEL 49-1405

PHILCO
MODEL 49-1405

PHILCO MODEL 49-1405

TRADE NAME	Philco, Model 49-1405
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 6AQ6 Det.-AVC-AF, 35L6GT Power Output, 50Y7GT Rectifier.
POWER SUPPLY	105-120 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .31 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.
Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to ext ant. lead with loop connected. Low side to chassis.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/49-#492-24 SET #54-FOLDER #24

PARTS LIST AND DESCRIPTIONS

PHILCO MODEL 49-1405

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	6AQ6	6AQ6	7BT	
4	Power Output	35L6GT	35L6GT	7AC	
5	Rectifier	50Y7GT	50Y7GT	-	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
6	20	150	30-2568-22	AF4F	UP3015	DY-20-150	D13292	Voltage Doubler
7A	40	250	30-2575-26		UP4425		D5860	Filter
B	40	250						"
C	20	150			BR2015			"
8	.04	400	61-0107	484-05	GT6S4	ST-6-04	TC-14	Line Filter
9	.1	400	61-0113	484-.1	GT4P1	ST-4-1	72P2	Line Isolation
10	.004	600	30-4623	684-004	GT6D4	ST-6-004	TC-24	Output Plate Bypass
11	.006	400	61-0120	484-006	GT6D6	ST-6-006	TC-26	Audio Coupling
12	.006	400	61-0120	484-006	GT6D6	ST-6-006	TC-26	" "
13	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	Tone Compensation
14	.1	400	61-0113	484-.1	GT4P1	ST-4-1	TC-1	AF Plate Decoup.-Note
15	.003	600	61-0109	684-003	GT6D3	ST-6-003	TC-23	IF Plate Decoup.
16	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	IF Screen Byp.
17	.05	200	61-0122	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
18	.03	400	45-3500-1	484-03	GT4S3	ST-6-03	TC-13	" "
19	220	300	66-122001001	1468-00025	5W5T25	M0.5-325	1FM-325	Output Grid Bypass-Cer.
20	56	500	60-00515307	1468-00005	5W5Q5	M0.5-45	1FM-45	Osc. Grid Cap.
21	10	300	30-1224-6	1469-00001	5R5Q1	M0S.5-41	MS-41	Fixed Trimmer-Cer.
22	5	500	60-90505007	1469-000005	5R5V5	M0S.5-55	MS-55	Ext. Ant. Coupling

See Note-Not used in all models.

CONTROLS

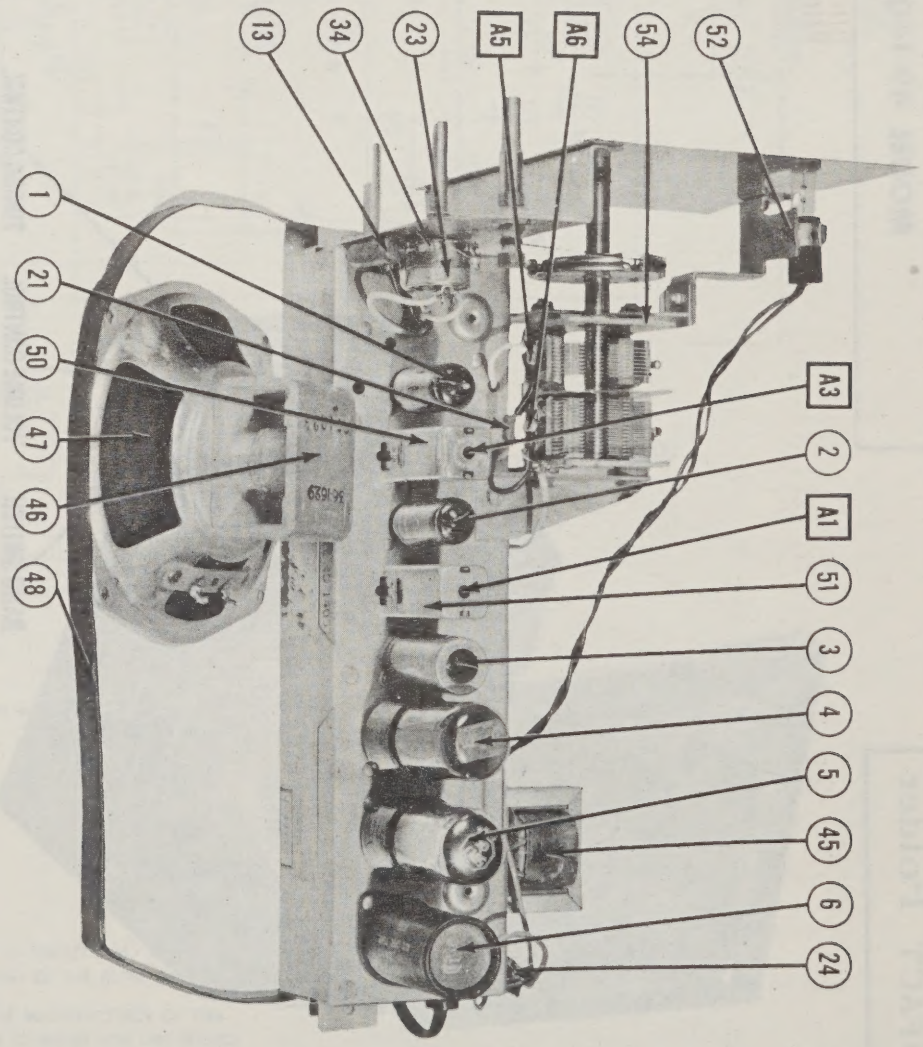
ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	
23A	2 Meg.	½	33-5535-15	D18-139X	T-116	Volume Control tapped @ 1 Meg.
B	Shaft		Not Req.	A	Not Req.	Attach to 23A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
24	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Ant. Loading
25	22KΩ	½	66-3223340	BTS-22K	Red-Red-Or. Osc. Grid
26	33Ω	½	66-0333340	BW-½-33	Or.-Or.-Blk. Parasitic Suppressor
27	22KΩ	½	66-3223340	BTS-22K	Red-Red-Or. AVC Network
28	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. " "
29	100Ω	½	66-1103340	BW-½-100	Br.-Blk.-Br. IF Cathode
30	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. IF Screen
31	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red IF Plate Decoup.
32	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Bleeder
33	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Diode Filter
34	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Tone Compensation
35	10 Meg.	½	66-6103340	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
36	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
37	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Decoup.-See Note
38	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Output Grid
39	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. Output Cathode
40	680KΩ	½		BTS-680K	Blue-Gray-Yl. Phono Shunt
41	10KΩ	1	66-3104340	BTA-10K	Br.-Blk.-Or. Filter
42	10KΩ	1	66-3104340	BTA-10K	Br.-Blk.-Or. "
43	180Ω	1	66-1184340	BW-1-180	Br.-Gray-Br. "
44	120KΩ	½	66-4123340	BTS-120K	Br.-Red-Yl. Line Isolation

Note-Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
45A	3800Ω	3.5Ω	410Ω	.7Ω	32-8242-4	A-3849	T22887	A-2902	
B					32-8242-2				Alternate Transformer

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-1071		†Use adaptor baffle
46	PM	3.5Ω	36-1629	Mod. P5-V	52A1	
	CONE DIA.	VC DIA.				
47	5-1/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.
48	Loop Ant.		3.3Ω	76-2127-9	
49	Osc. Coil	1.2Ω	11Ω	32-4190-2	14-1060
50	Input IF	13Ω	13Ω	32-4160	16-6678
51	Output IF	15Ω	15Ω	32-4240	

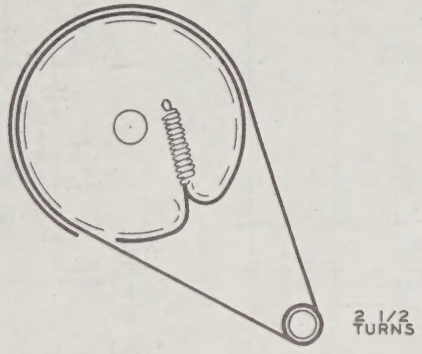
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
52	Bayonet	6-8	0.25	Blue	34-2605		Type #44

MISCELLANEOUS

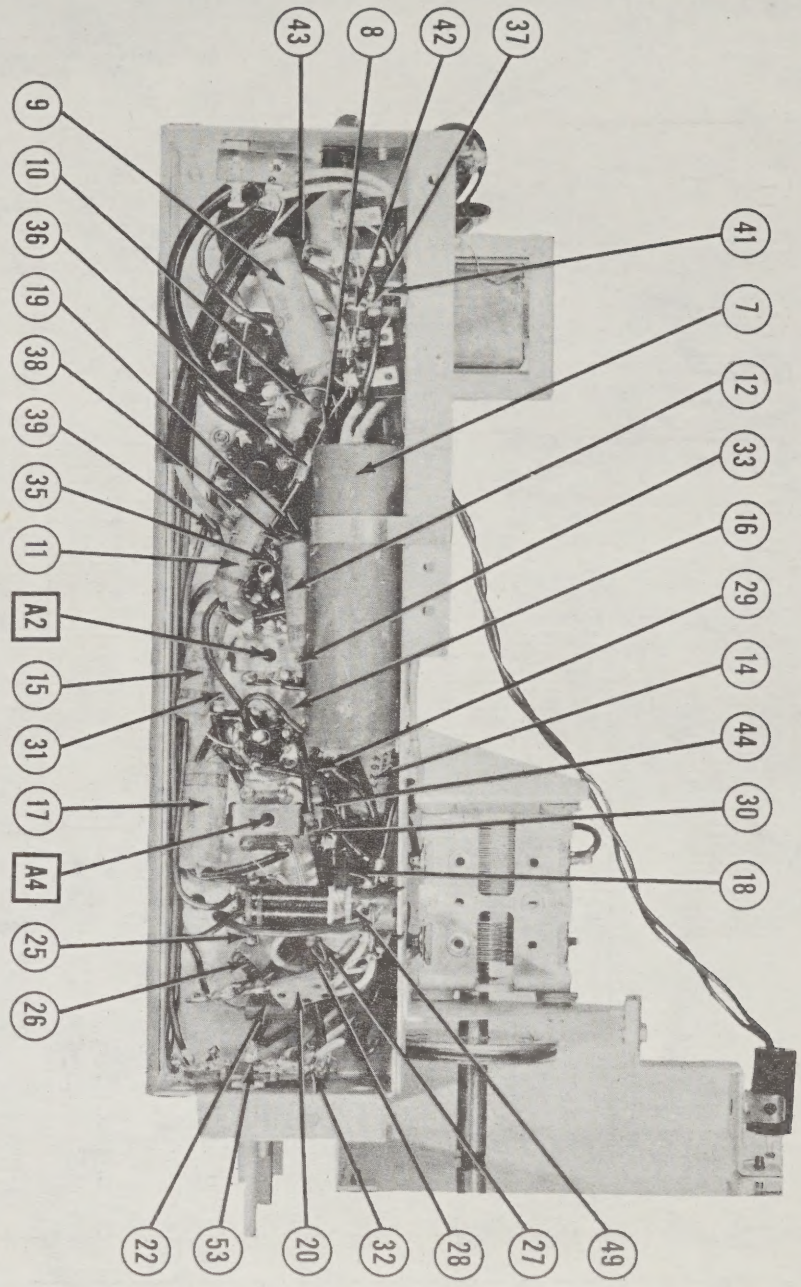
ITEM No.	PART NAME	PHILCO PART No.	NOTES
53	Switch	42-1847-1	Function
54	2 Gang Var. Cap	31-2727	(45-505MMF, 40-185MMF)
	Cabinet	10727	
	Knob	54-4527-9	
	Dial Pointer	56-5956FCP	
	Dial Scale	54-5022	

TUNING GANG FULLY CLOSED

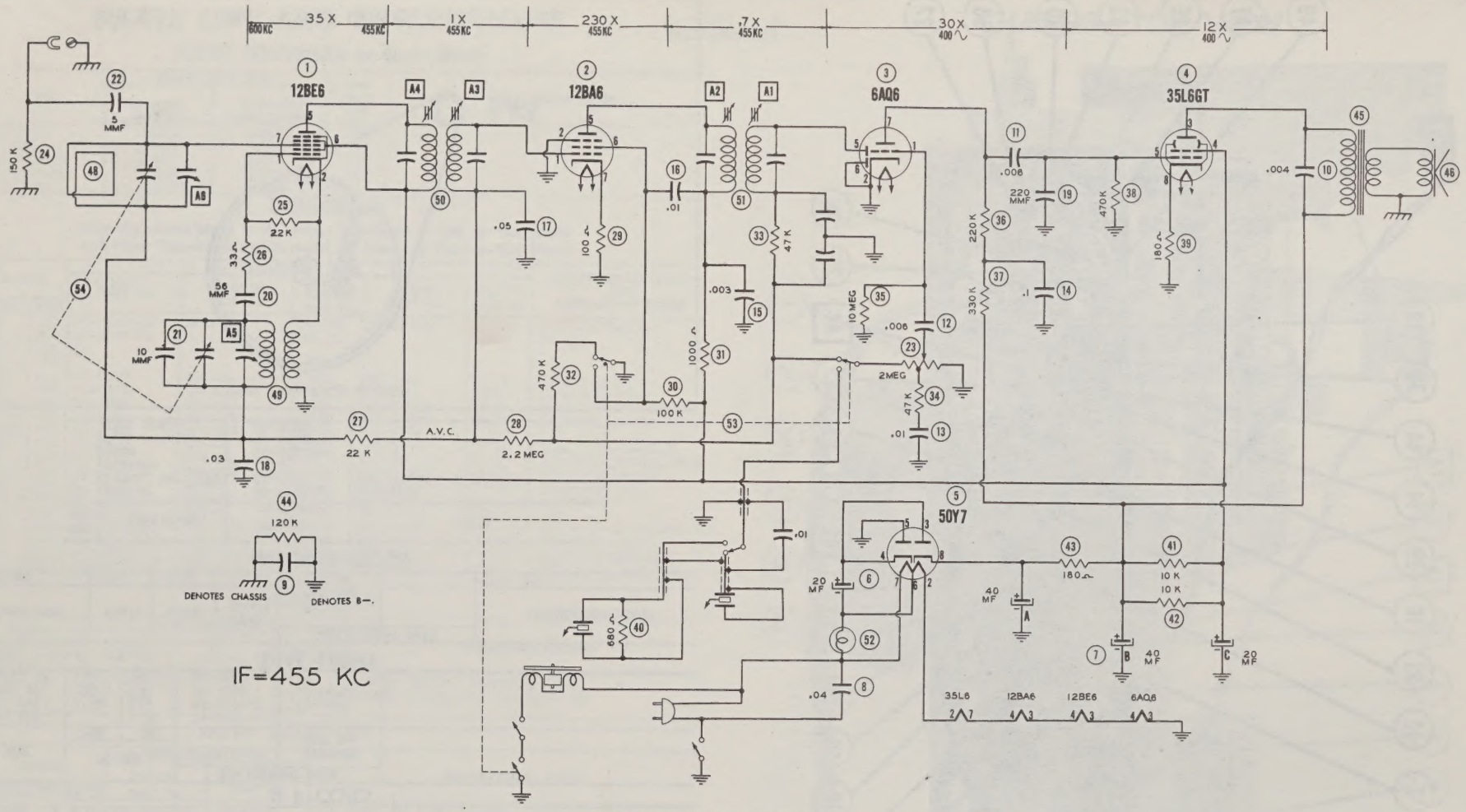


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



PHILCO MODEL 49-1405



VOLTAGE READINGS

RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12BE6	-4VDC§	0V.	7VAC	19VAC	125VDC	125VDC	-.6VDC	-
2	12BA6	-.6VDC	0V.	19VAC	33VAC	125VDC	40VDC	.4V.	-
3	6AQ6	-.8VDC	0V.	0V.	7VAC	-.6VDC	0V.	60VDC	-
4	35L6GT	0V.	70VAC	205VDC	125VDC	0V.	0V.	33VAC	8.8VDC
5	50Y7GT	0V.	70VAC	115VDC	230VDC	0V.	112VAC	117VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12BE6	22KΩ	1.2Ω	7Ω	19Ω	55KΩ	55KΩ	2.7 Meg.	-
2	12BA6	2.7 Meg.	0Ω	19Ω	32Ω	60KΩ	160KΩ	100Ω	-
3	6AQ6	10 Meg.	0Ω	0Ω	7Ω	2 Meg.	0Ω	600KΩ	-
4	35L6GT	INF.	65Ω	50KΩ	55KΩ	470KΩ	0Ω	32Ω	180Ω
5	50Y7GT	INF.	65Ω	90KΩ	50KΩ	0Ω	105Ω	110Ω	90KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1949

492-24

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.